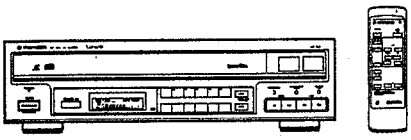
PIONEER®
The Art of Entertainment

Service Manual



ORDER NO.
ARP2319

CD CDV LD PLAYER

CLD-600

CLD - 600 HAS THE FOLLOWING :

Type	Power requirement	Remarks
HEZ	AC 220V (switchable) *	
HB	AC 240V (switchable) *	

* Change the position of the jumper wire.

- **This manual is applicable to the HEZ and HB types.**
- **As to the HB type, refer to page 67.**
- **As to the ADJUSTMENT, refer to the CLD-1600 Service manual (ARP2308).**

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1. SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn
varoitusmerkki

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LASER
Picture 1
Warning sign for
laser radiation

2. LABEL CHECK

HEZ model

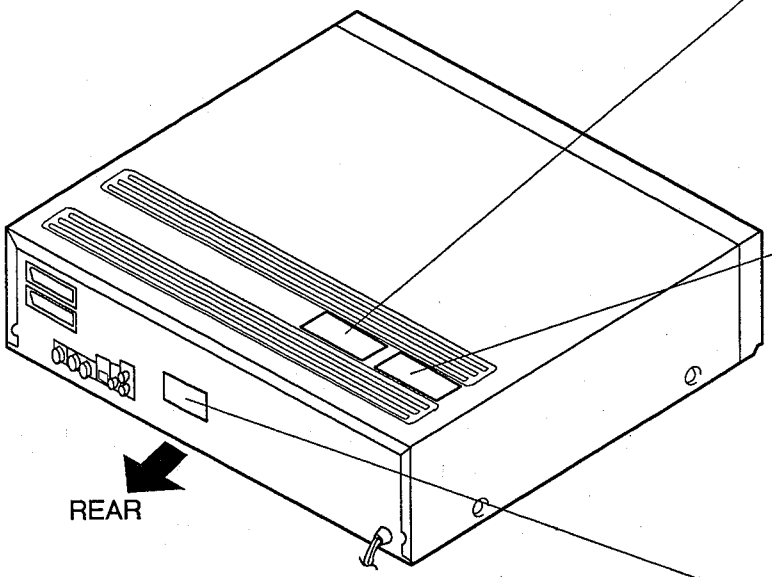
VARO!
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VARNING!
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.
PRW1233

HEZ model

ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL (ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
VRW1094

HB model

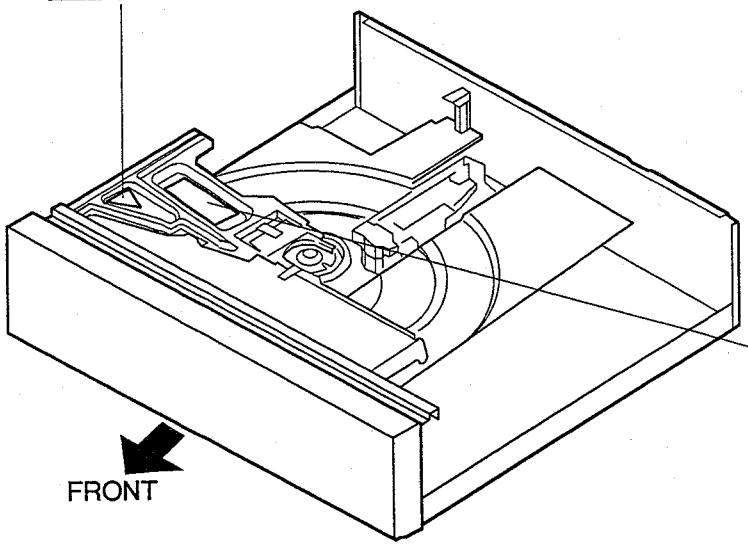
CAUTION
INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO BEAM
PRW1018



HEZ and HB models

CLASS 1
LASER PRODUCT
VRW-328

HEZ and HB models



HEZ model

LASER RADIATION
AVOID EXPOSURE TO BEAM, CLASS 3B LASER PRODUCT
ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION
UNDGÅ UDSÆTTELSE FOR STRÅLING
UNSICHTBARE
LASER-STRAHLUNG NICHT DEM STRAHL AUSSETZEN! LASER KLASSE 3B
PRW-162-A

3. PACKING, EXPLODED VIEWS AND PARTS LIST

NOTES:

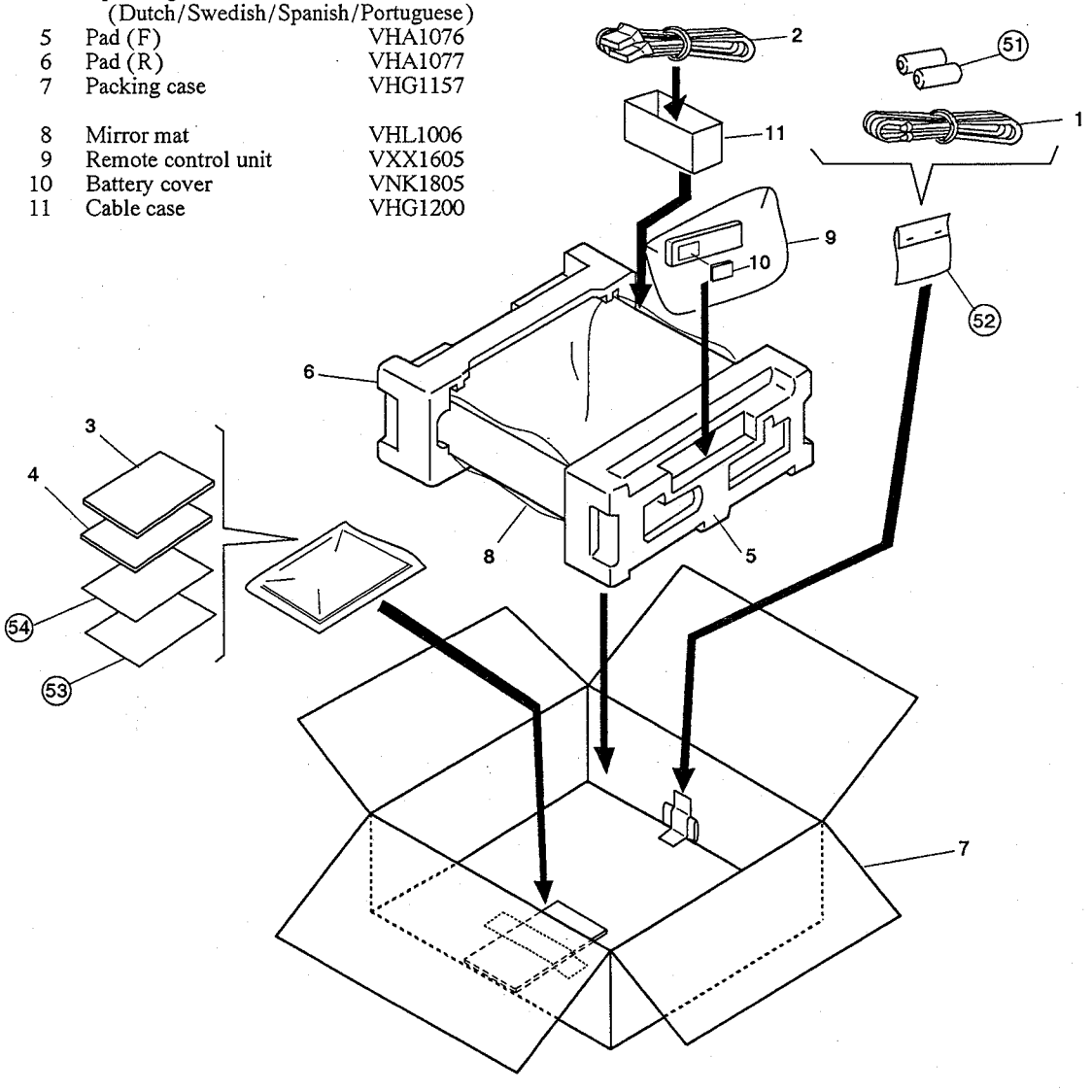
- *The Parts with an encircled number are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by " ◉ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

3.1 PACKING

Parts List

Mark	No.	Description	Part No.
	1	Connection cord	VDE-055
	2	Euroconnector cable (SCART ⟷ SCART)	VDE1022
	3	Operating instructions (English/French/German/Italian)	VRE1005
	4	Operating instructions (Dutch/Swedish/Spanish/Portuguese)	VRF1010
	5	Pad (F)	VHA1076
	6	Pad (R)	VHA1077
	7	Packing case	VHG1157
	8	Mirror mat	VHL1006
	9	Remote control unit	VXX1605
	10	Battery cover	VNK1805
	11	Cable case	VHG1200

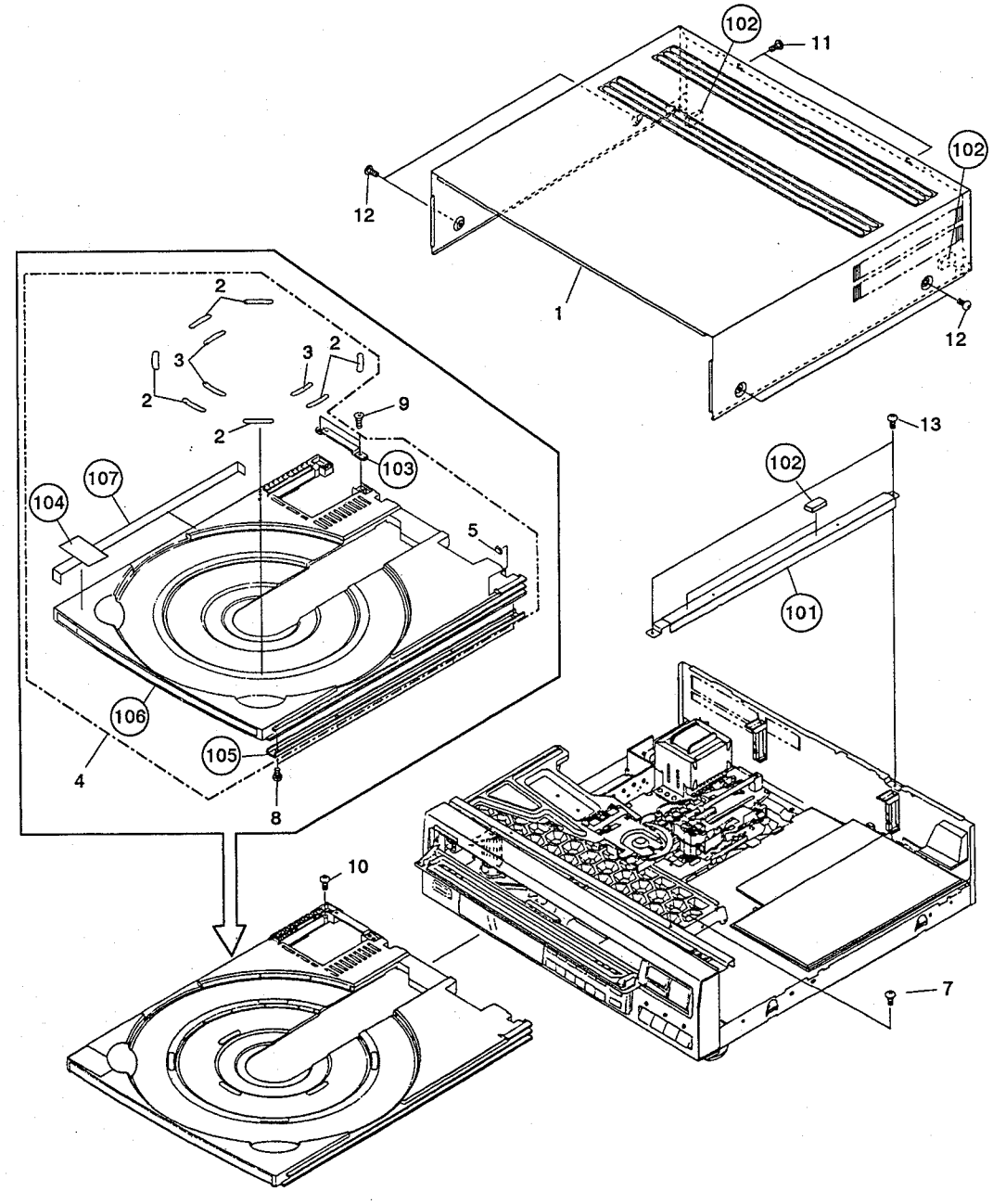
Mark	No.	Description	Part No.
	51	Dry cell battery (R03, AAA)	VEM-022
	52	Polyethylene bag	VHL-014
	53	Caution card	VRR1008
	54	Caution card (EW)	VRM1027



3.2 EXTERIOR SECTION

Parts List

Mark	No.	Description	Part No.
	1	Bonnet S	VXX1267
	2	Disc pad(L)	VEC1191
	3	Disc pad(S)	VEC1192
	4	Tray assembly	VXX1453
	5	Tray rubber	VEB1089
	6	• • • • •	
	7	Screw	PCZ30P080FMC
	8	Screw	BPZ30P080FCU
	9	Screw	CPZ30P100FMC
	10	Screw	BPZ30P140FMC
	11	Screw	BBZ30P080FCC
	12	Screw	BCZ40P060FZK
	13	Screw	BBZ30P060FCC
	101	Center angle	VNE1305
	102	Cushion	VEC1004
	103	Tray angle	VNE1309
	104	Carry label	VRW1058
	105	Tray reinforced plate	VNE1528
	106	Tray	VNK1354
	107	Side plate	VNE1362

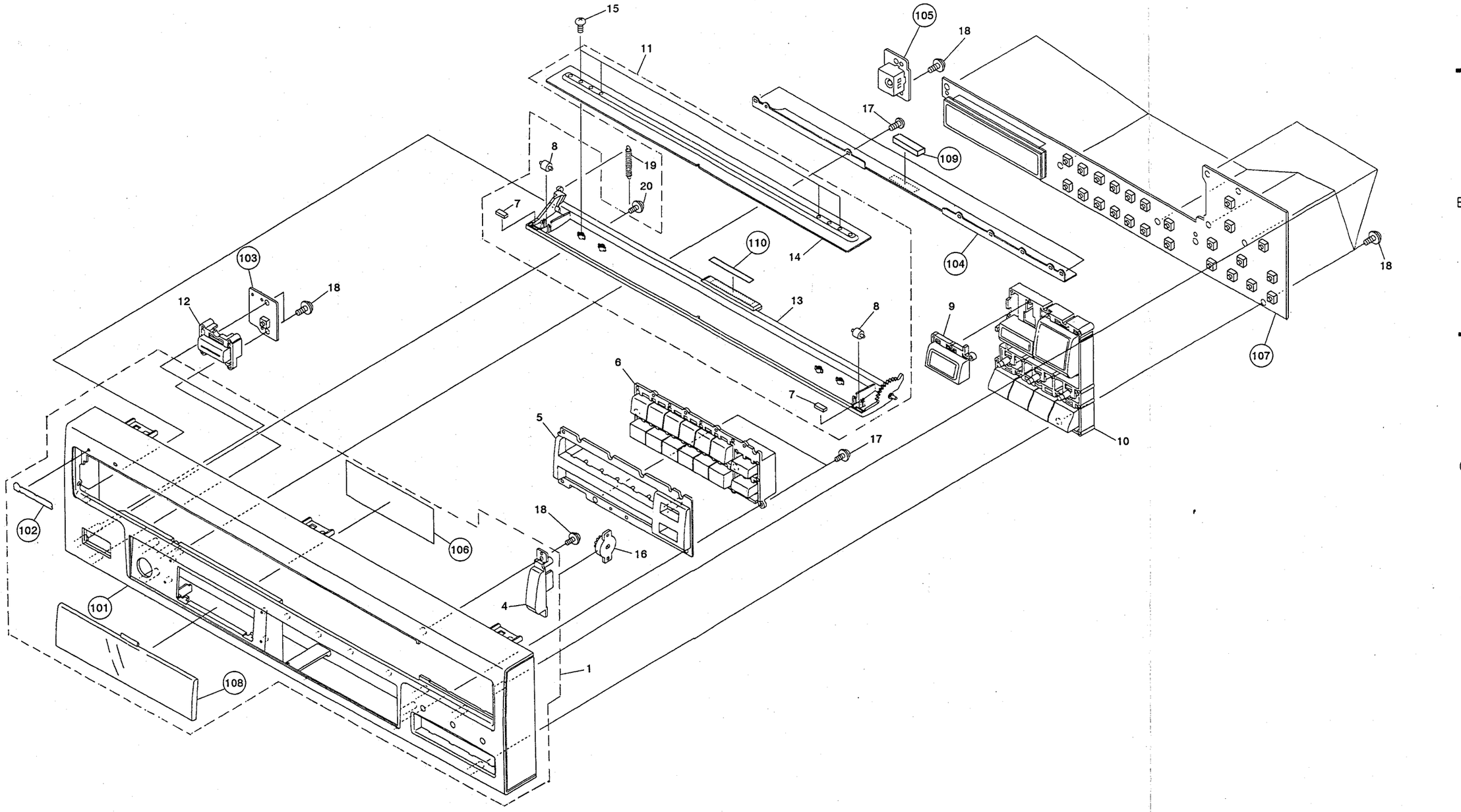


3.3 FRONT PANEL SECTION

Parts List

Mark	No.	Description	Part No.
	1	Front panel assembly S	VXX1588
	2	• • • • •	
	3	• • • • •	
	4	Side panel	VNK1667
	5	Sub panel	VNK1669
	6	Ten key	VNK1670
	7	Door dump rubber	VEB1033
	8	Roller	VNL1042
	9	O/C key	VNK1666
	10	Main key	VNK1665
	11	Door assembly-S	VXX1548
	12	Power key	VNK1668
	13	Front door assembly	VXA1572
	14	Door plate	VNE1482
	15	Screw	BPZ20P040FZK
	16	Dumper assembly	VXA1053
	17	Screw	BBZ20P050FMC
	18	Screw	BBZ26P060FCU
	19	Door spring	VBH1144
	20	Screw	IPZ26P060FCC
	101	Front panel assembly	VXA1654
	102	Name plate	PAN1035
	103	PWSB assembly	VWG1222
	104	Reinforced plate	VNE1610
	105	IRAB assembly	VWG1226
	106	FL filter	VEC1470
	107	FLKY assembly	VWG1219
	108	Display panel	VNK1877
	109	Dump rubber	VEB1166
	110	Spacer	VEC1488

Note: 103 PWSB, 105 IRAB and 107 FLKY assemblies are supplied for service as the FLKB assembly (VWM1175).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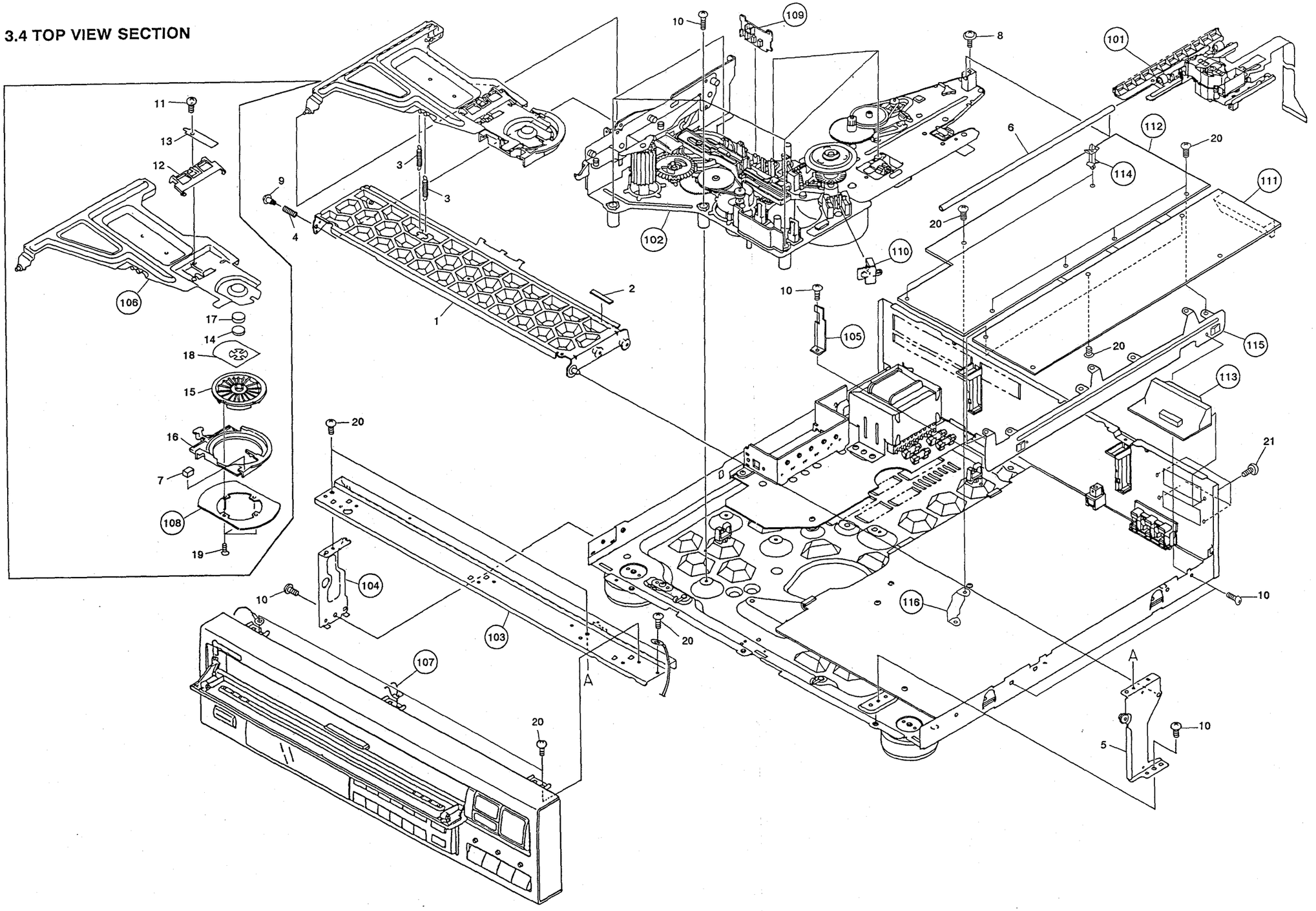
3.4 TOP VIEW SECTION



Parts List

Mark No.	Description	Part No.
1	Clamper arm (A) assembly	VXA1319
2	Rubber (A)	VEB1084
3	Clamper spring	VBH1094
4	Arm spring	VBH1093
5	Side stay (R) assembly	VXA1529
6	Carriage shaft	VLL1177
7	Clamper pad	VEC1264
8	Screw (B)	VBA1018
9	Screw (B)	VBA1008
10	Screw	BBZ30P060FCC
11	Screw	BBZ30P060FMC
12	Parallel link	VNL1254
13	Plate spring	VBK1014
14	Ball holder	VNL1289
15	Clamper S	VNL1248
16	Clamper holder	VNL1205
17	Rubber sheet	VEB1114
18	Thrust holder	VBK1018
19	Screw	CPZ20P050FMC
20	Screw	IBZ30P060FCC
21	Screw	BBZ30P080FCC

Mark No.	Description	Part No.
101	Rack assembly	VWT1061
102	Mechanism assembly	VWT1073
103	Front angle	VNE1304
104	Side stay (L)	VNE1306
105	SM head holder	VNE1592
106	Clamper arm (B)	VNE1308
107	Earth plate	VNE1518
108	Stabilizer	VNE1333
109	SW1 board assembly	VWG1212
110	FG board assembly	VWG1214
111	PALB board assembly	VWV1191
112	VDTB board assembly	VWS1095
113	SCRT board assembly	VWV1196
114	PC suport	VEC1508
115	PCB holder	VNE1652
116	PCB holder (C)	VNE1329

Note: 109 SW1 board assembly and 110 FG board assembly are supplied for service as the MAIN board assembly (VWM1164).

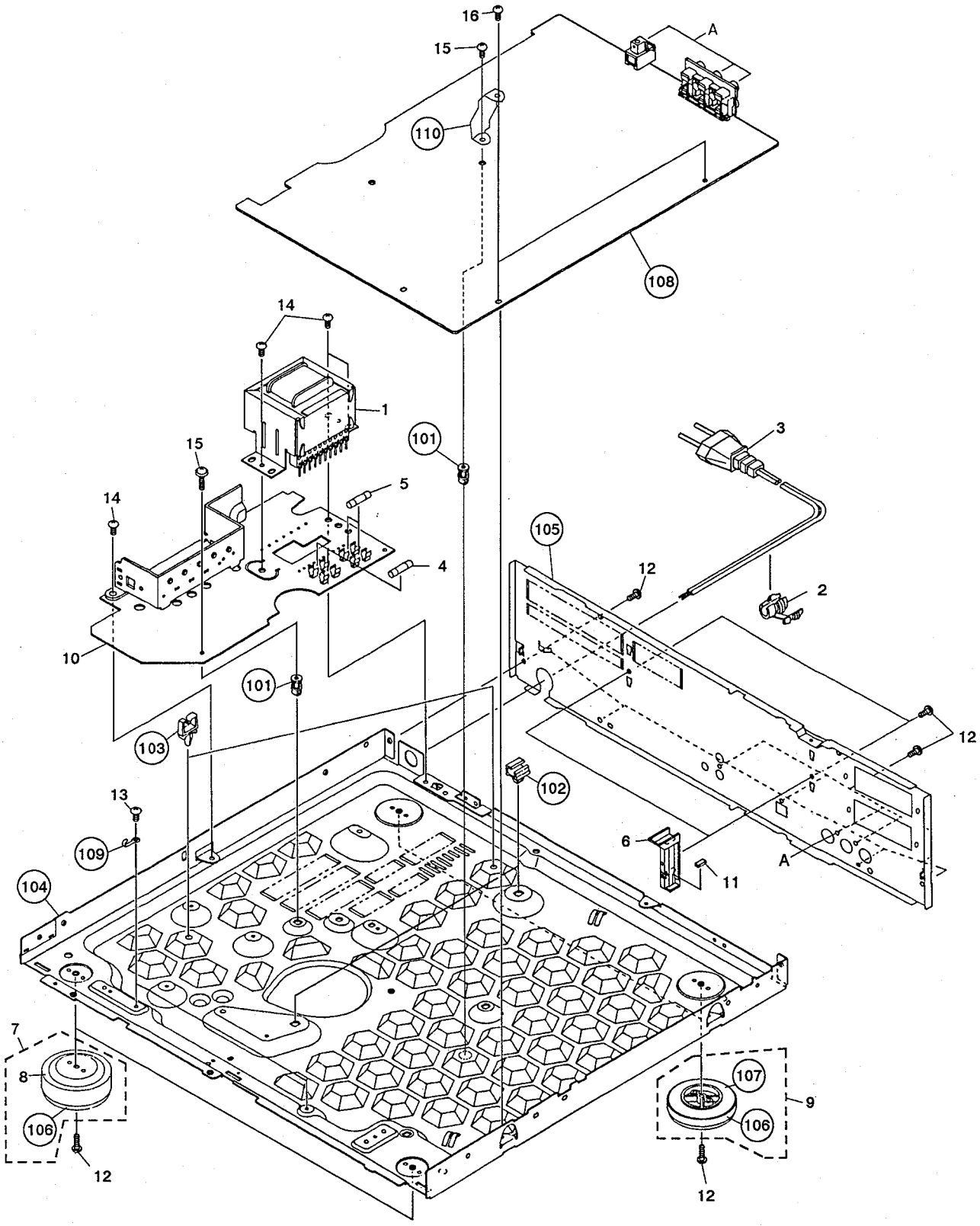
111 PALB board assembly, 112 VDTB board assembly and 113 SCRT board assembly are supplied for service as the VTPB board assembly (VWM1168).

3.5 BASE SECTION

Parts List

Mark	No.	Description	Part No.
⚠	1	Power transformer	VTT1062
⚠	2	Strain relief	CM-22B
⚠	3	AC power cord	VDG1028
⚠	4	Fuse(FU203,FU204) (T1.25A)	REK-101
⚠	5	Fuse(FU201,FU202) (T3.15A)	REK-105
	6	Tray stopper	VNL1202
	7	Insulator assembly	VXA1686
	8	Insulator	VNK1095
	9	Insulator assembly	VXA1687
◉	10	SYPS assembly	VWR1093
	11	Door dump rubber	VEB1033
	12	Screw	BBZ30P080FCC
	13	Screw	BBZ30P060FCC
	14	Screw	BCZ40P080FUC
	15	Screw	IPZ30P160FMC
	16	Screw	IBZ30P060FCC
	101	P. C. B spacer	PNY-404
	102	P plate holder	PNY-405
	103	Wire crip (B)	VEC1012
	104	Base chassis	VNA1121
	105	Rear panel	VNA1209
	106	Stopper	VEC1487
	107	Insulator	VNK1248
	108	ASCB board assembly	VWX1063
	109	Cord holder	VNF-069
	110	PCB holder(C)	VNE1329

Note: 108 ASCB board assembly is supplied for service as the MAIN board assembly (VWM1164).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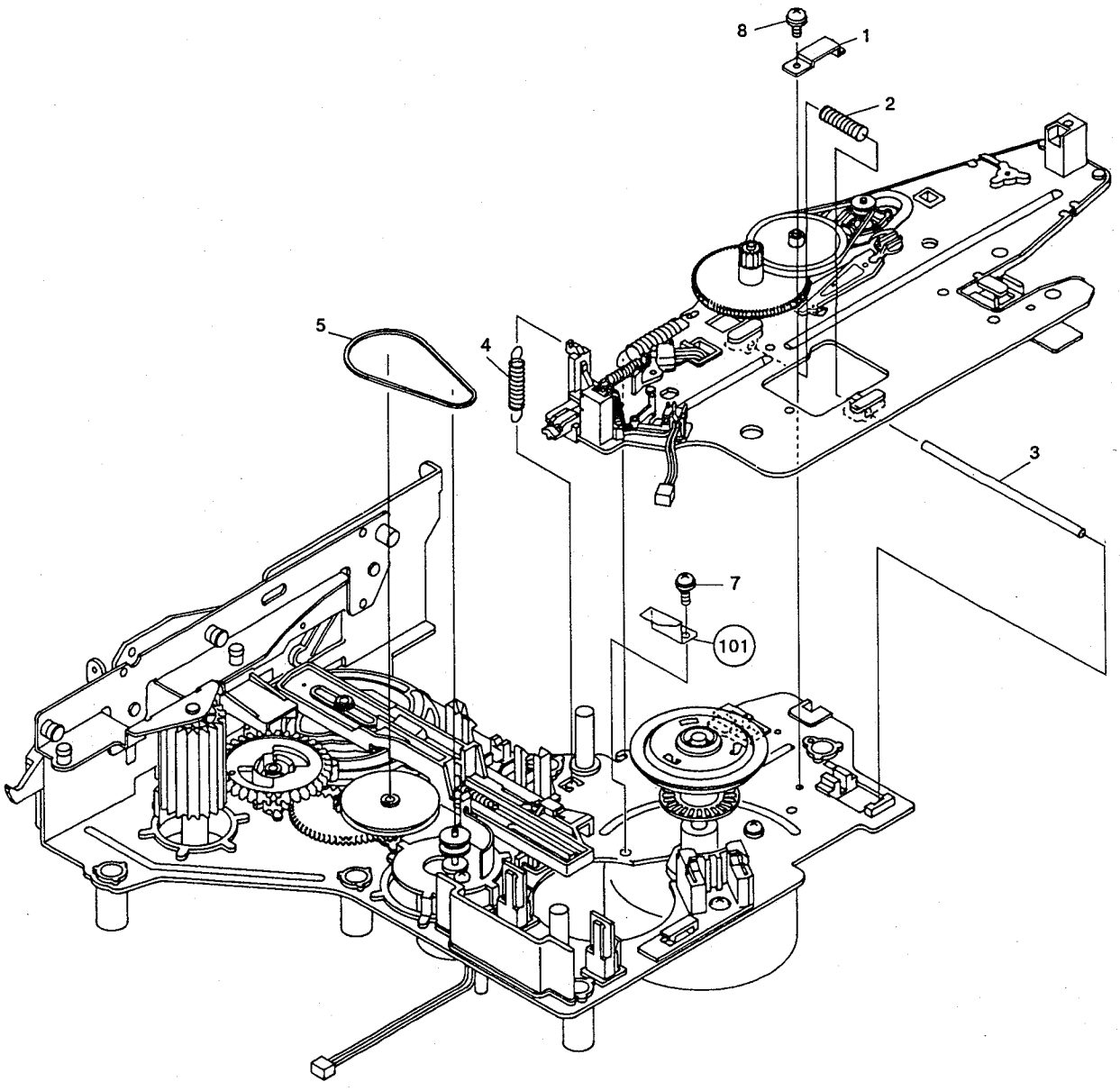
3.6 MECHANISM ASSEMBLY

Parts List

Mark	No.	Description	Part No.
	1	Plate spring	VBK1013
	2	Thrust spring	VBH1073
	3	Tilt shaft	VLL1175
	4	Tilt pulling spring	VBH1074
	5	Belt	PEB1013
	6	• • • • •	
	7	Screw	PMA30P050FMC
	8	Screw	ABZ26P050FMC
	101	Cam head stopper	VNE1331

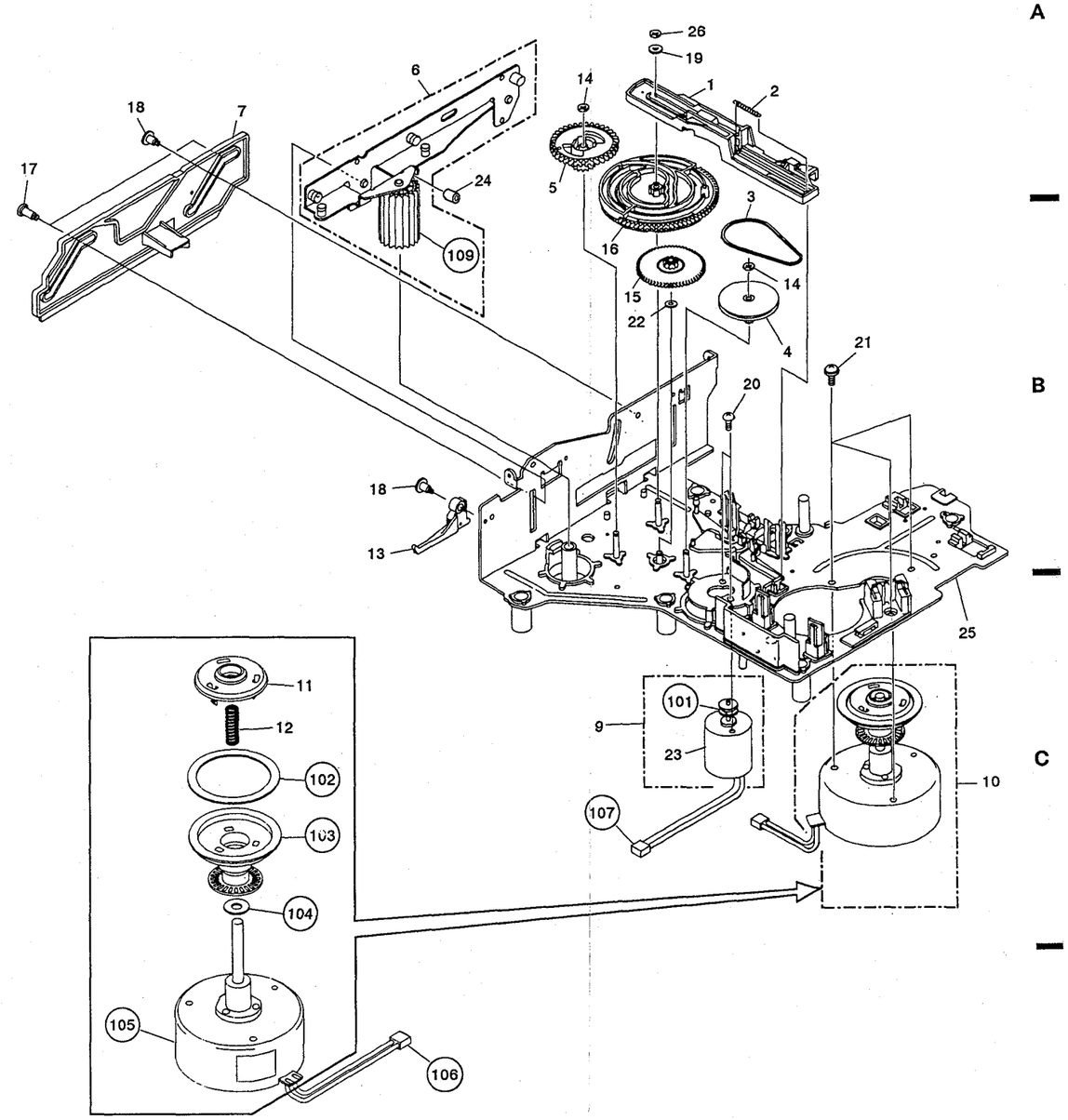


3.7 CHASSIS SECTION

Parts List

Mark	No.	Description	Part No.
	1	Spring slanting cam	VNL1191
	2	Cam spring	VBH1082
	3	Belt	PEB1013
	4	Gear pulley	VNL1249
	5	Follow gear	VNL1194
	6	Roller plate assembly	VXA1531
	7	Slide cam	VNL1188
	8	• • • • •	
	9	Loading motor assembly	VXX1262
	10	Spindle motor assembly	VXA1474
	11	Centering hab	VNL1174
	12	Centering spring	VBH1083
	13	Door lever	VNL1407
	14	Washer	WT26D047D025
	15	Two stair gear	VNL1193
	16	Cam gear	VNL1190
	17	Screw (C)	VBA1015
	18	Screw (B)	VBA1008
	19	Nylon washer	WA32N080W020
	20	Screw	PMZ30P040FMC
	21	Screw	PMA30P050FMC
	22	Washer	WA32D060D025
	23	Loading motor	VXM1034
	24	Stop ring	VEB1091
◉	25	Chassis assembly	VXA1575
	26	E ring	YE23FUC

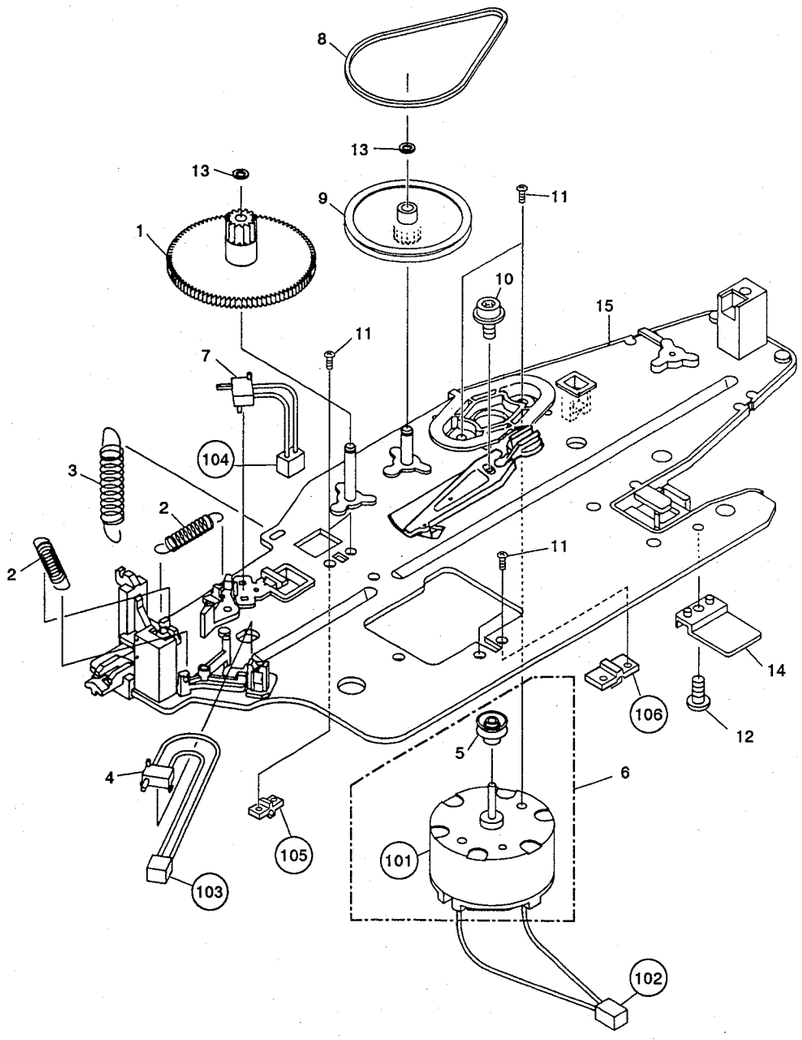
Mark	No.	Description	Part No.
	101	Motor pulley	VLL1176
	102	Rubber sheet	VEB1103
	103	Turn table assembly	VXA1283
	104	Oil stopped washer	VBF1002
	105	Spindle motor	VXM1032
	106	Housing assembly	VKP1566
	107	Housing assembly	VKP1916
	108	• • • • •	
	109	Slider gear	VNL1189



3.8 SERVO MECHANISM BASE SECTION

Parts List

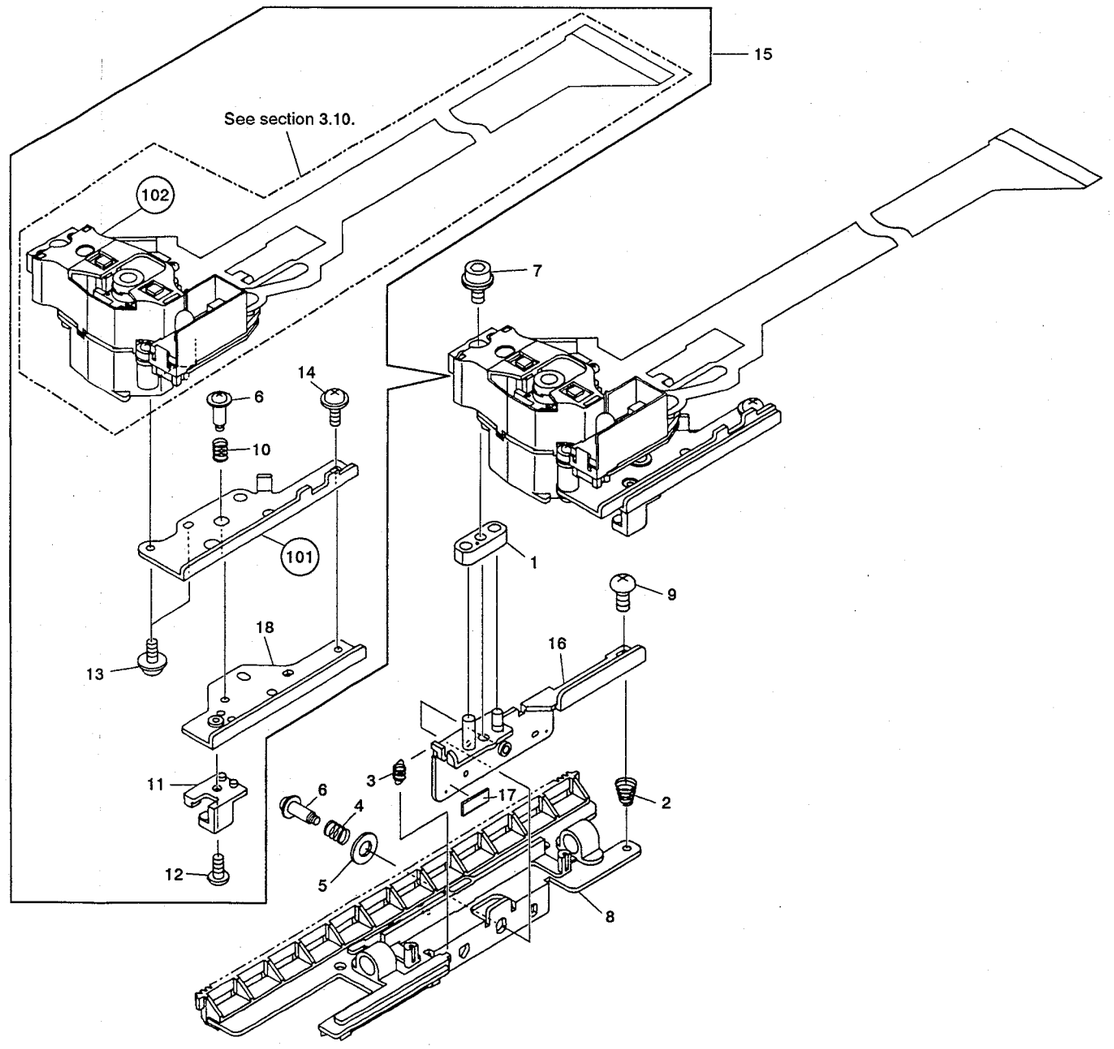
Mark	No.	Description	Part No.
	1	CA gear (3)	VNL1196
	2	Switch pulling spring	VBH1079
	3	TC pulling spring	VBH1181
	4	Push switch (S5:OUTER)	DSG1014
	5	CA pulley (1)	VNL1197
	6	Carriage motor assembly	VXX1261
	7	Push switch (S4:INNER)	DSG1014
	8	CA belt	VEB1077
	9	CA pulley (2)	VNL1198
	10	Screw	SMF30H080FBT
	11	Screw	PMZ26P040FMC
	12	Screw	BPZ26P050FMC
	13	Washer	WT26D047D025
	14	FLE base	VNL1341
◉	15	Servo mechanism base assembly - S	VXA1583
	101	Carriage motor	VXM1033
	102	Housing assembly	VKP1917
	103	Housing assembly	VKP1553
	104	Housing assembly	VKP1554
	105	Holder (A)	VNV1022
	106	Holder (B)	VNV1023



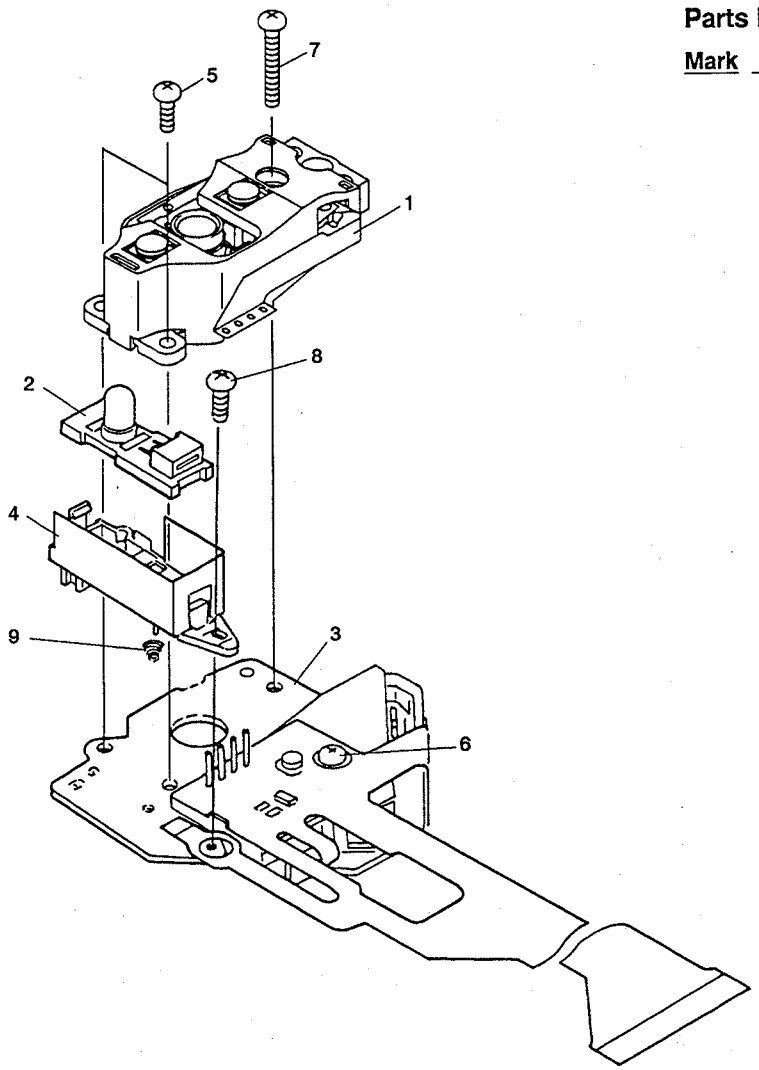
3.9 RACK SECTION

Parts List

Mark	No.	Description	Part No.
	1	PU base	VNL1209
	2	LP center spring	VBH1075
	3	PU pulling spring	VBH1089
	4	L-2 spring	VBH1090
	5	Washer	WC30FMC
	6	Screw	VBA1007
	7	Screw (2.6 × 10)	VLL1192
◉	8	Rack	VNL1186
	9	Screw	BMZ26P080FMC
	10	TAN spring	VBH1081
	11	TAN base	VNL1199
	12	Screw	PMZ20P040FMC
	13	Screw	PMA20P040FMC
	14	Screw	AMZ20P050FMC
	15	Slider assembly	VWT1060
	16	PU mount base assembly	VXA1567
	17	Spacer (S)	VEC1284
	18	TAN plate (1)	VNE1606
	101	TAN plate (2)	VNE1303
	102	Pickup assembly	VWY1021



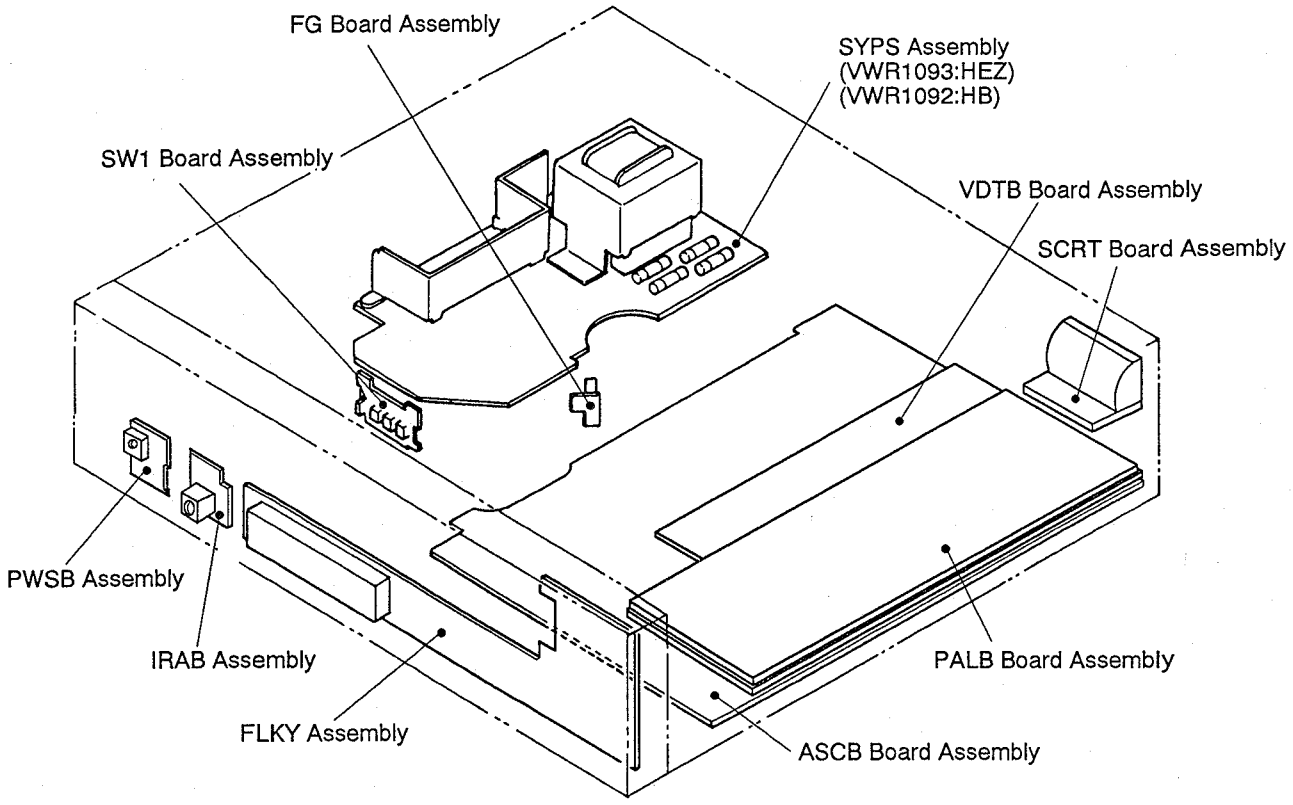
3.10 PICKUP ASSEMBLY



Parts List of Pickup assembly

Mark	No.	Description	Part No.
	1	Actuator assembly	VXX1551
	2	Sensor assembly	VEX1018
	3	Pre-pickup assembly	VXX1413
	4	Sensor stay	VNH1024
	5	Screw	PMA20P060FMC
	6	Screw	PMA20P080FMC
	7	Screw	PMA20P160FMC
	8	Screw	BMZ20P060FMC
	9	Sensor spring	VBH1087

4. P. C. BOARDS LOCATION



MAIN BOARD ASSEMBLY (VWM1164)

MAIN board assembly is composed of ASCB, FG and SW1 board assemblies.

VTPB BOARD ASSEMBLY (VWM1168)

VTPB board assembly is composed of VDTB, PALB and SCRT board assemblies.

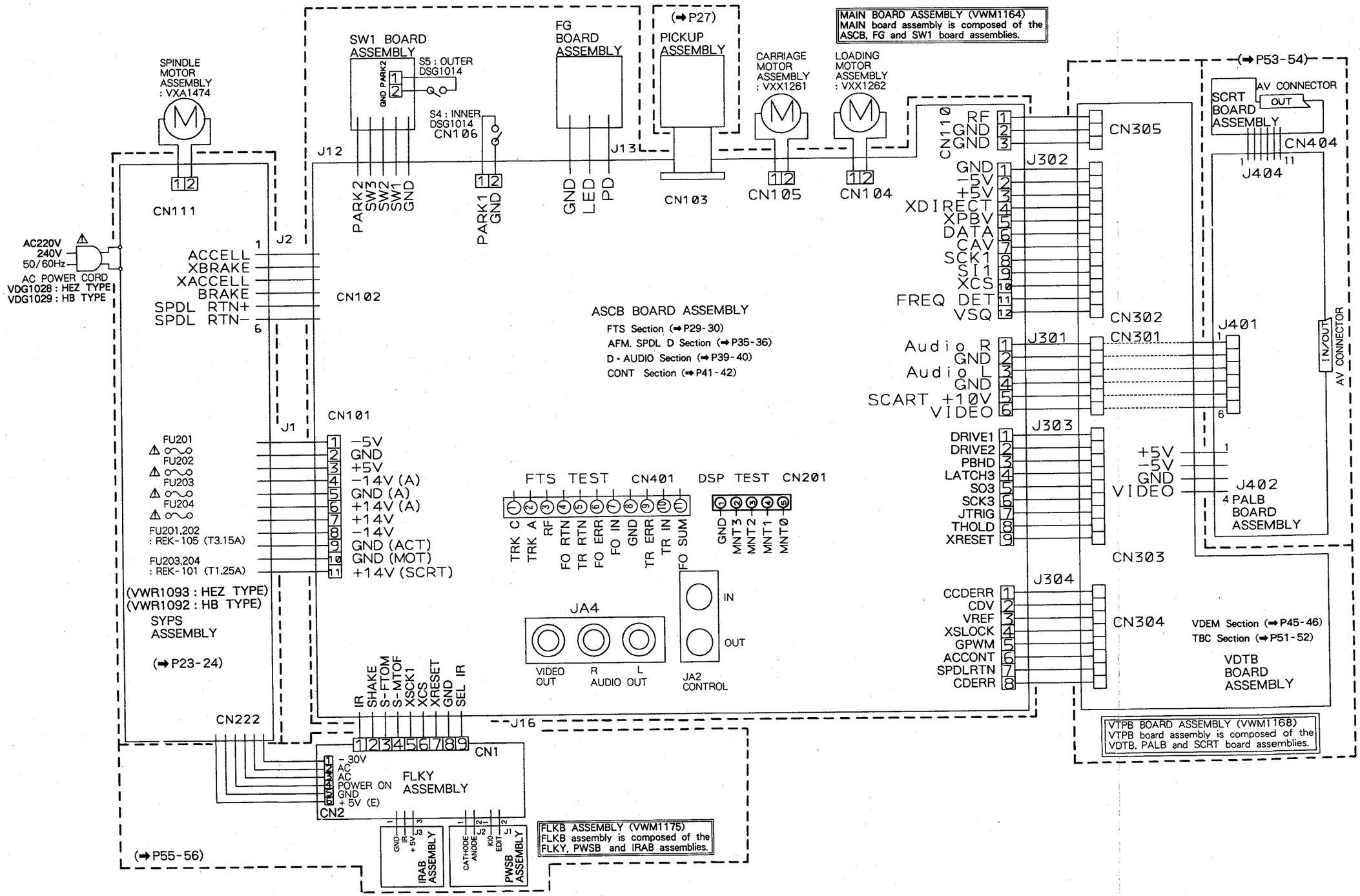
FLKB ASSEMBLY (VWM1175)

FLKB assembly is composed of FLKY, PWSB and IRAB assemblies.

ASCB	: **A**UDIO **S**ERVO **C**ONTROL **B**OARD
FG	: **FG** COUNTER BOARD
SW1	: **SW1** BOARD
VDTB	: **V**IDEO AND **T**BC **B**OARD
PALB	: **PAL B**OARD
SCRT	: EUROPIEAN **SCRT**
FLKY	: **FL** TUBE AND **KEY** BOARD
PWSB	: **P**OWER **SW**ITCH **B**OARD
IRAB	: **I**NF**R**ARED **A**MPLIFIER **B**OARD
HEPB	: **HEADP**HONE **B**OARD
SYPS	: **SY**STEM **P**OWER **S**UPPLY

5. SCHEMATIC AND P.C.BOARDS DIAGRAM

5.1 OVERALL WIRING DIAGRAM



5.2 SYPS ASSEMBLY

(VWR1092 : HB TYPE)
SYPS ASSEMBLY (VWR1093 : HEZ TYPE)

Q201, Q204,
Q206 : 2SD1762
Q202, Q203,
Q205 : 2SB1185
Q207 : 2SB1238X
Q214, Q219 : 2SA933S
Q213 : DTC114ES
Q218 : 2SC1740S
Q217 : DTA114ES

D101, 103 MTZJ5.6B
D102, 104 MTZJ5.1C
D201, D202 : S2VB20
D208, D209,
D216, D217 : 1SS252
D213, D214,
D222, D223 : 1SR35-100AVL
D212, D215 : 10ELS2
D220 : MTZJ22C

IC201,202 : ICP-N15
IC205 : NJM78M05FA
IC206 : ICP-N25

R231 : VCN1029

L201 : VTL1008
L202 : VTL-157

Q207 : -30V REGULATOR

IC205 : EVER +5V REGULATOR

—— : SPDL Servo Loop Line

AC 220V, 240V 50/60Hz
AC POWER CORD
VDG1028 : HEZ TYPE
VDG1029 : HB TYPE

VCG-048
HB 240V
HEZ 220V
POWER TRANSFORMER VTT1062
FU201,202 : REK-105
FU203,204 : REK-101

IC201,202,206 : PROTECTOR

CN222
EVER +5V
GND
POWER ON
AC
AC
-30V
TO FLKY ASSEMBLY CN2 (➡P55)

J1
+14V (SCART)
FTS GND
FTS GND
FTS -14V
FTS +14V
AUDIO +14V
AUDIO GND
AUDIO -14V
+5V
GND
-5V
TO ASCB BOARD ASSEMBLY CN101 (➡P29)

J2
ACCEL
X-BRAKE
X-ACCEL
BRAKE
SPDL RTN+
SPDL RTN-
TO ASCB BOARD ASSEMBLY CN102 (➡P36)

CN111
SPDL-
SPDL+
SPINDLE MOTOR ASSEMBLY VXA1474

Q203-206 : SPDL MOTOR DRIVE

Q219 : POWER ON SW

Q202,213,214 : +5V REGULATOR

Q201,217,218 : -5V REGULATOR

1. RESISTORS:
Indicated in Ω , 1/4W, 1/8W and 1/8W, ±5% tolerance unless otherwise noted kΩ , MΩ , (F): ± 1%, (G): ± 2%,(K): ± 10%, (M): ± 20% tolerance.

2. CAPACITORS:
Indicated in capacity (μF) /voltage(V)unless otherwise noted p:pF.
Indication without voltage is 50V except electrolytic capacitor.

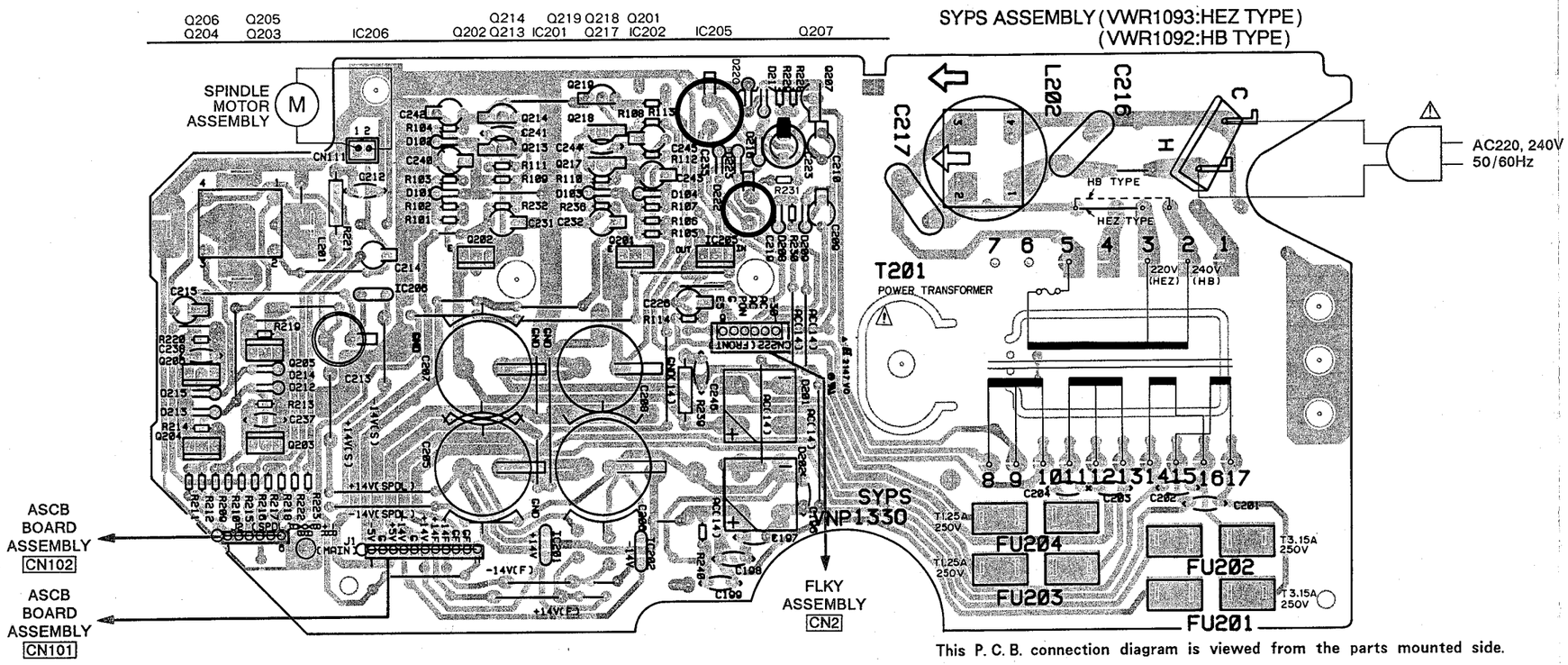
3. VOLTAGE, CURRENT:
▭ ;DC voltage (V) at no input signal.
Value in ( ) is DC voltage at rated power.
⇦mA ;DC current at no input signal.

4. OTHERS:
➡ :Signal route.
⊘ :Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

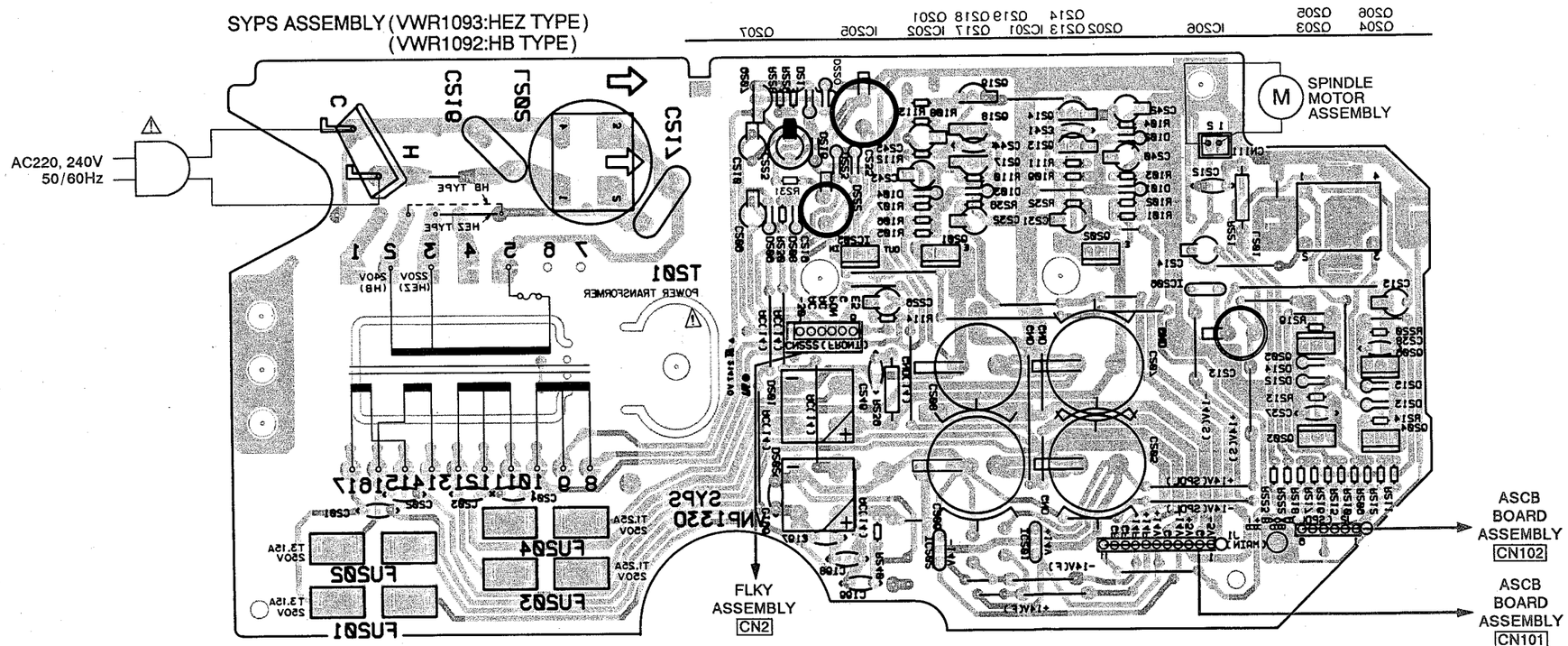
5. SWITCHES :(The underlined indicates the switch position)
OUTSIDE OF P.C. BOARDS
S4 :INNER
S5 :OUTER
SW1 ASSEMBLY
S1-S3 :LOADING/TILT
FLKY ASSEMBLY
S1 :◀◀ SCAN
S2 :▶▶ SCAN
S3 :|◀◀ SKIP
S4 :▶▶| SKIP
S5 :LANGUAGE
S6 :HILITE/INTRO SCAN
S7 :RANDOM PLAY
S8 :OPEN/CLOSE (▲)
S9 :STOP (■)
S10 :PLAY/PAUSE (▶/II)
S11 :1 DIRECT SEARCH
S12 :2
S13 :3
S14 :4
S15 :5
S16 :6
S17 :7
S18 :8
S19 :9
S20 :0
S21 :PGM
S22 :+10
S23 :EDIT
S24 :CHAP/FRAME/TIME
S25 :DOOR SW
PSWB ASSEMBLY
S26 :POWER

SYPS ASSEMBLY (VWR1093:HEZ TYPE)
(VWR1092:HB TYPE)



This P. C. B. connection diagram is viewed from the parts mounted side.

SYPS ASSEMBLY (VWR1093:HEZ TYPE)
(VWR1092:HB TYPE)

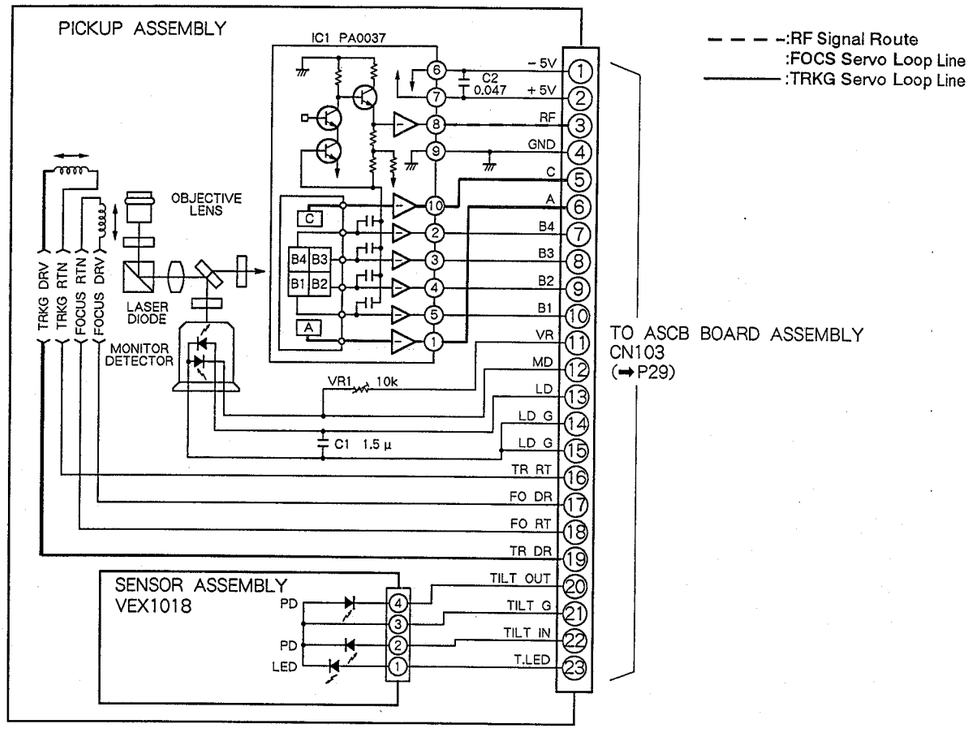


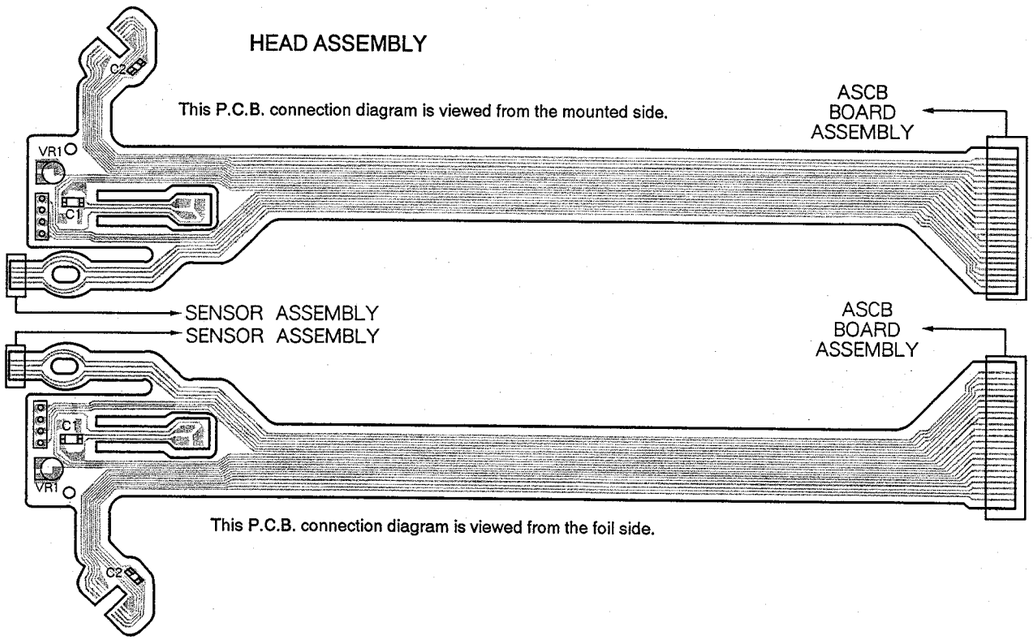
This P. C. B. connection diagram is viewed from the foil side.

P.C.B. pattern diagram indication	Corresponding part symbol	Part name
	or	Transistor
	or	FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

5.3 PICKUP ASSEMBLY





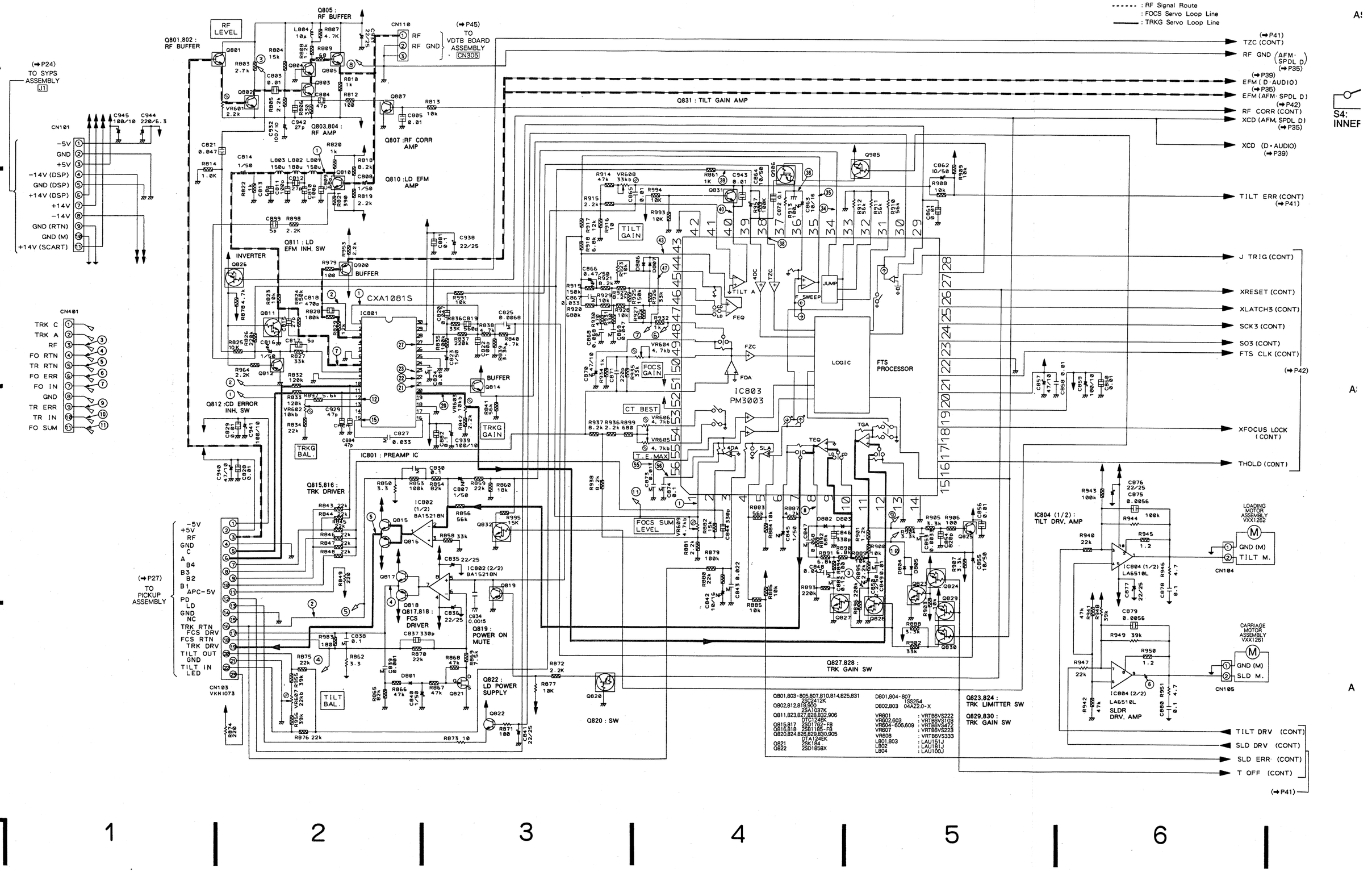
FTS SECTION

Note: (No.) in the table correspond to the pin No.

IC801 (CXA1081S)		CN401	IC803 (PM3003)		Other points
① 1.5Vp-p	⑳ 400mVp-p	③ 300mVp-p	① 300mVp-p	㊴ 1Vp-p	① Q810 Collector 400mVp-p
② 1.5Vp-p	㉑ 700mVp-p	④ 5Vp-p	⑧ 2Vp-p	㊵ 200mVp-p	② CN103 Pin 16 200mVp-p
⑦ 40mVp-p	㉒ 10Vp-p :still	⑤ 4Vp-p	㉞ 500mVp-p :still	㊸ 1.5Vp-p	③ Q828 Collector 400mVp-p
⑫ 200mVp-p	㉓ 2Vp-p	⑥ 600mVp-p	㉟ 1Vp-p	㊼ 150mVp-p	④ CN103 Pin 17 15Vp-p
⑮ 400mVp-p	㉗ 3Vp-p	⑦ 1.5Vp-p	㊱ 2Vp-p	㊺ 250mVp-p	⑤ CN103 Pin 19 20Vp-p
		⑨ 1.25Vp-p :open	㊳ 2Vp-p	㊻ 250mVp-p	⑥ IC804 Pin 9 3Vp-p
		⑩ 1.25Vp-p			
		⑪ 500mVp-p			

5.4 ASCB BOARD ASSEMBLY (FTS SECTION)

ASCB BOARD ASSEMBLY (FTS SECTION)



7 8 9 10 11 12

A B C D

FLKY ASSEMBLY CN1

CN112

S5: OUTER

SW1 BOARD ASSEMBLY

FG BOARD ASSEMBLY

ASCB BOARD ASSEMBLY

PICKUP ASSEMBLY

CN106

S4: INNER

LOADING MOTOR ASSEMBLY

CN104

CARRIAGE MOTOR ASSEMBLY

CN105

SYPS ASSEMBLY J2

VDTB BOARD ASSEMBLY CN305

VDTB BOARD ASSEMBLY CN304

VDTB BOARD ASSEMBLY CN301

VDTB BOARD ASSEMBLY CN303

SYPS ASSEMBLY J1

VDTB BOARD ASSEMBLY CN302

(→P41) TZC (CONT)

RF GND (AFM, SPDL D) (→P35)

(→P39) EFM (D·AUDIO)

(→P35) EFM (AFM, SPDL D) (→P42)

RF CORR (CONT)

XCD (AFM, SPDL D) (→P35)

XCD (D·AUDIO) (→P39)

TILT ERR (CONT) (→P41)

J TRIG (CONT)

XRESET (CONT)

XLATCH3 (CONT)

SCK3 (CONT)

SO3 (CONT)

FTS CLK (CONT) (→P42)

XFOCUS LOCK (CONT)

THOLD (CONT)

LOADING MOTOR ASSEMBLY VXX1282: GND (M), TILT M. — CN104

CARRIAGE MOTOR ASSEMBLY VXX1281: GND (M), SLD M. — CN105

TILT DRV (CONT)

SLD DRV (CONT)

SLD ERR (CONT)

T OFF (CONT) (→P41)

OUT CONTROL IN

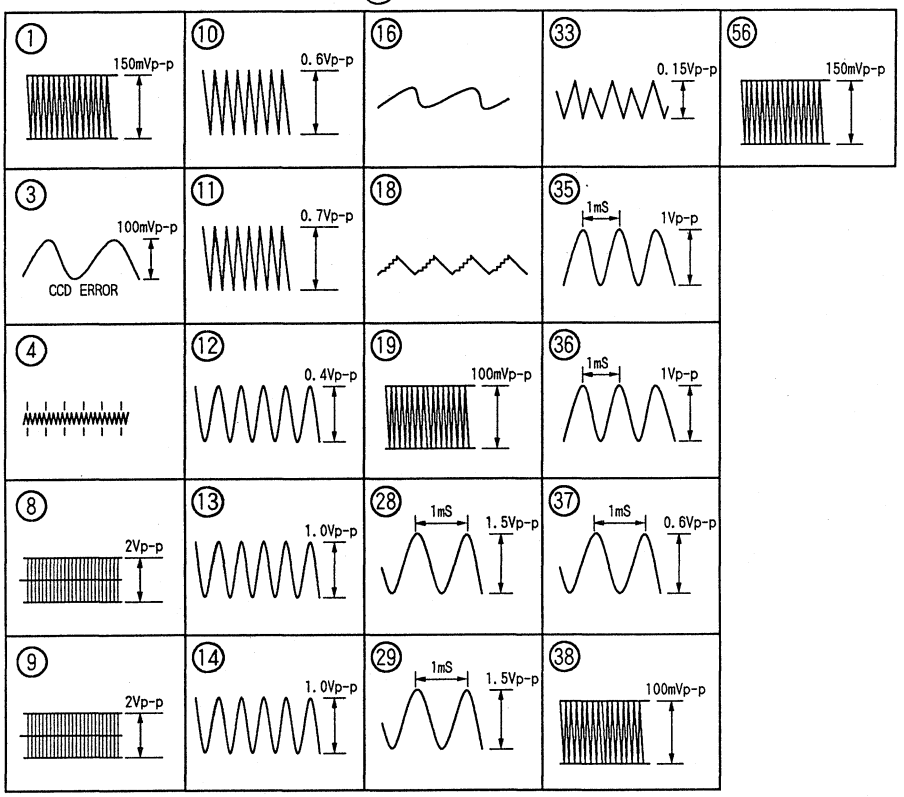
AUDIO OUT L R

VIDEO OUT

SAVE THE EARTH

AFM. SPDL D SECTION

- IC700 (HA12127ANT) Note : (No.) in the table correspond to the pin No.



D. AUDIO SECTION

Note: Waveforms and voltages are at the PLAY.

IC201 (CXD2500AQ)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	0	15	0	29	0	43	*	57	*	71	*
2	0	16	4.8	30	0	44	0	58	*	72	5
3	0	17	0	31	*	45	4.8	59	5	73	5
4	*	18	*	32	*	46	*	60	—	74	*
5	0	19	2.4	33	4.8	47	*	61	5	75	0
6	4.8	20	*	34	*	48	*	62	*	76	0
7	0	21	0	35	*	49	*	63	*	77	*
8	4.8	22	2.3	36	*	50	*	64	*	78	*
9	0	23	4.8	37	*	51	*	65	0	79	*
10	0	24	*	38	*	52	0	66	*	80	0
11	0	25	0	39	0	53	*	67	*		
12	0	26	0	40	4.8	54	*	68	0		
13	0	27	*	41	*	55	0	69	*		
14	0	28	0	42	*	56	*	70	5		

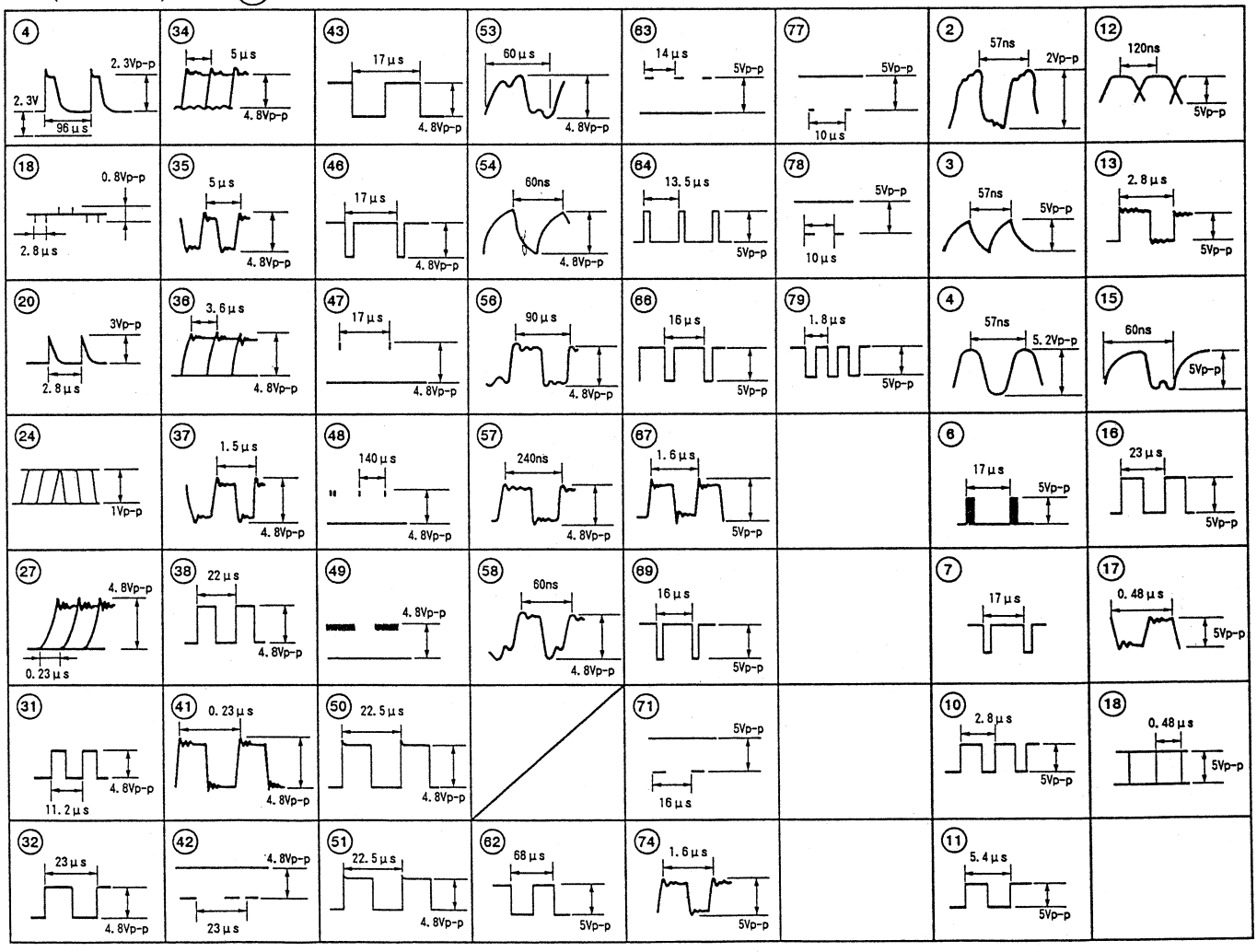
*: Refer to waveforms

IC202 (SM5840AP)

Pin No.	Voltage	Pin No.	Voltage
1	5	10	*
2	*	11	*
3	*	12	*
4	*	13	*
5	0	14	5
6	*	15	*
7	*	16	*
8	5	17	*
9	5	18	*

IC201 (CXD2500AQ) Note: (No.) in the table correspond to the pin No.

IC202 (SM5840AP)



5.6 ASCB BOARD ASSEMBLY (D. AUDIO SECTION)

ASCB BOARD ASSEMBLY (D. AUDIO SECTION)

: Video Signal Line
------ : RF Signal Route
———— : Analog Audio Signal Line
: Digtal Audio Signal Line

(➡P41-42) CONT
NPCLATCH
QFS
SCOR
S12
SCK2
XRESET
SO3
XLAT2
SCK3

CN201 85P-SHF-1AA
R396 220
R395 220

IC201 CXD2500AQ
EFM DEMODULATION

SM5840AP
IC202
DIGITAL FILTER

Q207 : MUTE INVERTER
Q213 : INVERTER
MUTE (CONT) (➡P41)
Q287
Q210 MUTE INVERTER

D/A CONVERTER
IC209
SAA7350

ATC BUFFER
IC204 (2/2)
M5218AP

IC211 : L CH L.P.F. AMP
NJM5532SD
VKB1038 JA4 (1/3)
IC213 : R CH L.P.F. AMP
NJM5532SD
VKB1038 JA4 (2/3)
AUDIO OUT

Q208 : POWER ON MUTE INVERTER
Q209 : MUTE SW
IC212 : L CH DIG./ANA. SW
IC212 TC4S66F
(➡P36) (AFM, SPDL D)
A.L.
XANA (CONT) (➡P41)

IC213 : R CH L.P.F. AMP
Q212 : MUTE SW
IC214 : R CH DIG./ANA. SW
IC214 TC4S66F
Q211 : POWER ON MUTE INVERTER
VKB1038 JA4 (3/3) VIDEO OUT

Q216 : INVERTER
J301
1 Audio-R
2 GND
3 Audio-L
4 GND
5 SCART+10V
6 VIDEO
A.R. (AFM, SPDL D) (➡P36)
TO VDTB BOARD ASSEMBLY CN301 (➡P46)

(➡P30) (FTS)
EFM
XCD

PLL ERROR AMP
IC204 (1/2)
M5218AP

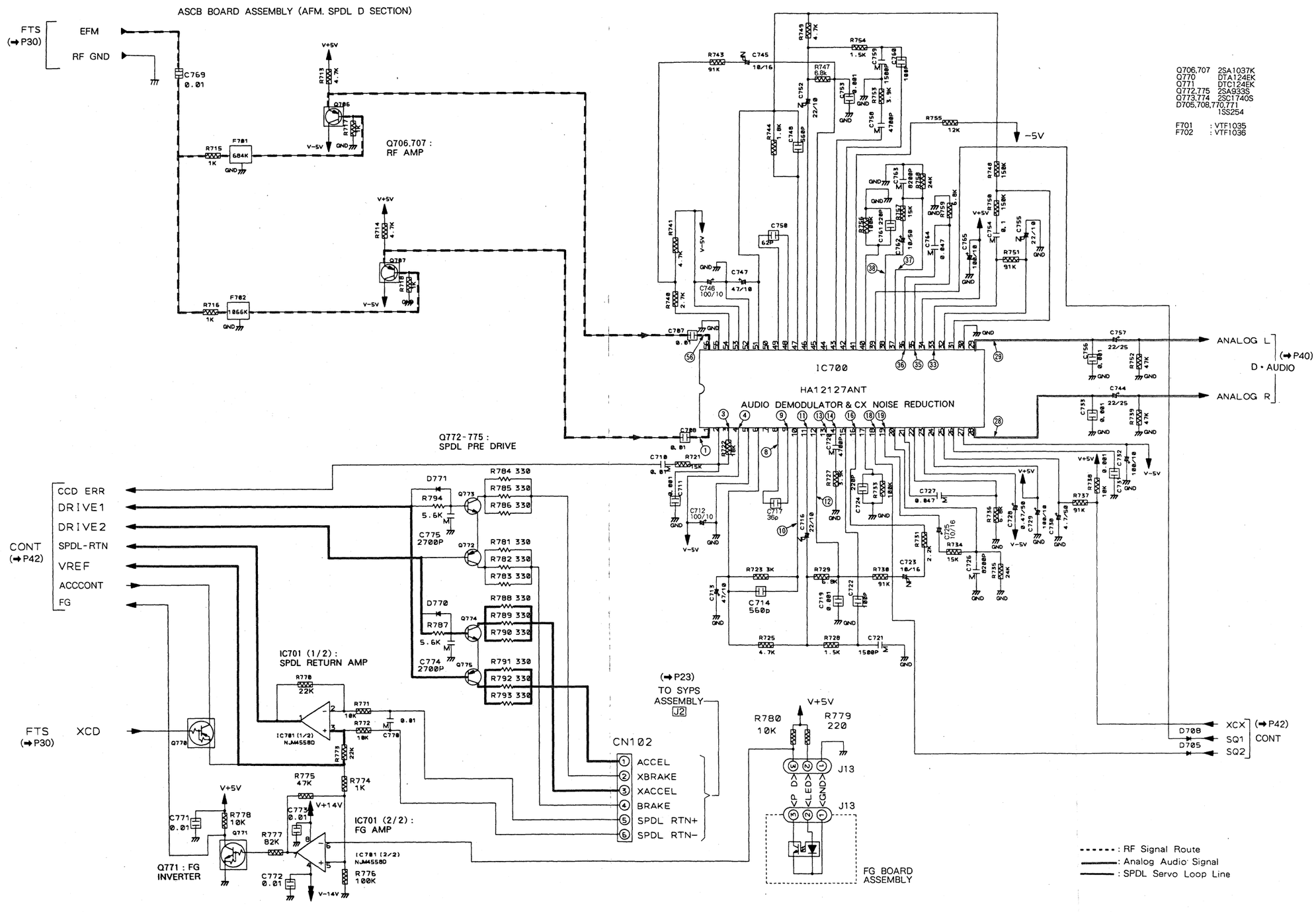
Q204-206 : +5V (DAC) REGULATOR
Q201,202 : PLL ERROR SW
CD SPDL ERR (CONT) (➡P42)
(➡P41) VREF (TO CONT)

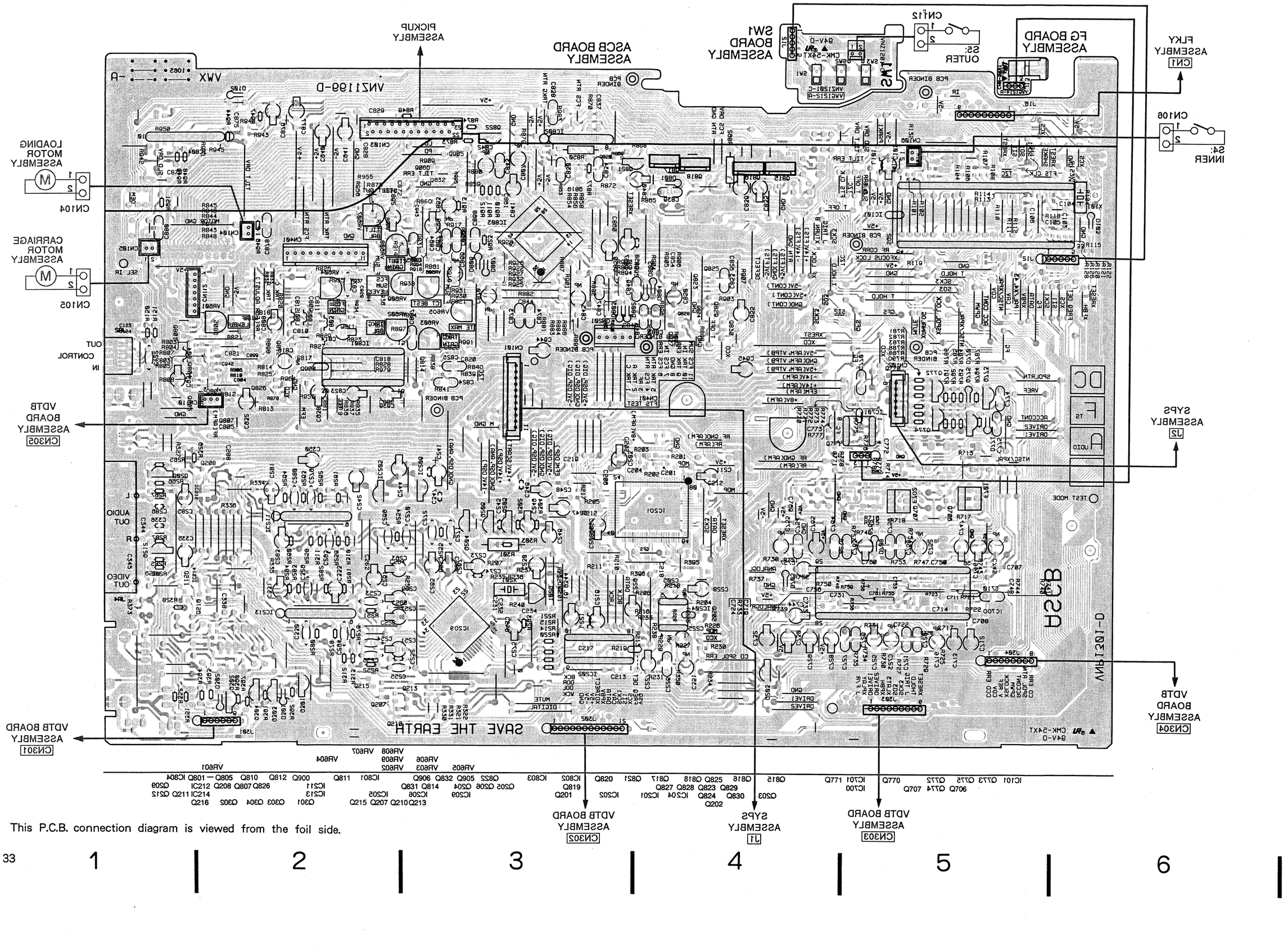
IC205 : +8V REGULATOR
NJM78L08A
IC206 : −8V REGULATOR
NJM79L08A

Q201	2SC2412K
Q202,213,216	DTA124EK
Q203	2SC1740S
Q204	2SB1237X
Q205,302	2SA933S
Q206,301	DTC124ES
Q207,210	2SA1037K
Q208,211,215	DTC124EK
Q209,212	2SD2144S

L221 : LAU680J

5.5 ASCB (AFM. SPDL D SECTION) AND FG BOARD ASSEMBLIES



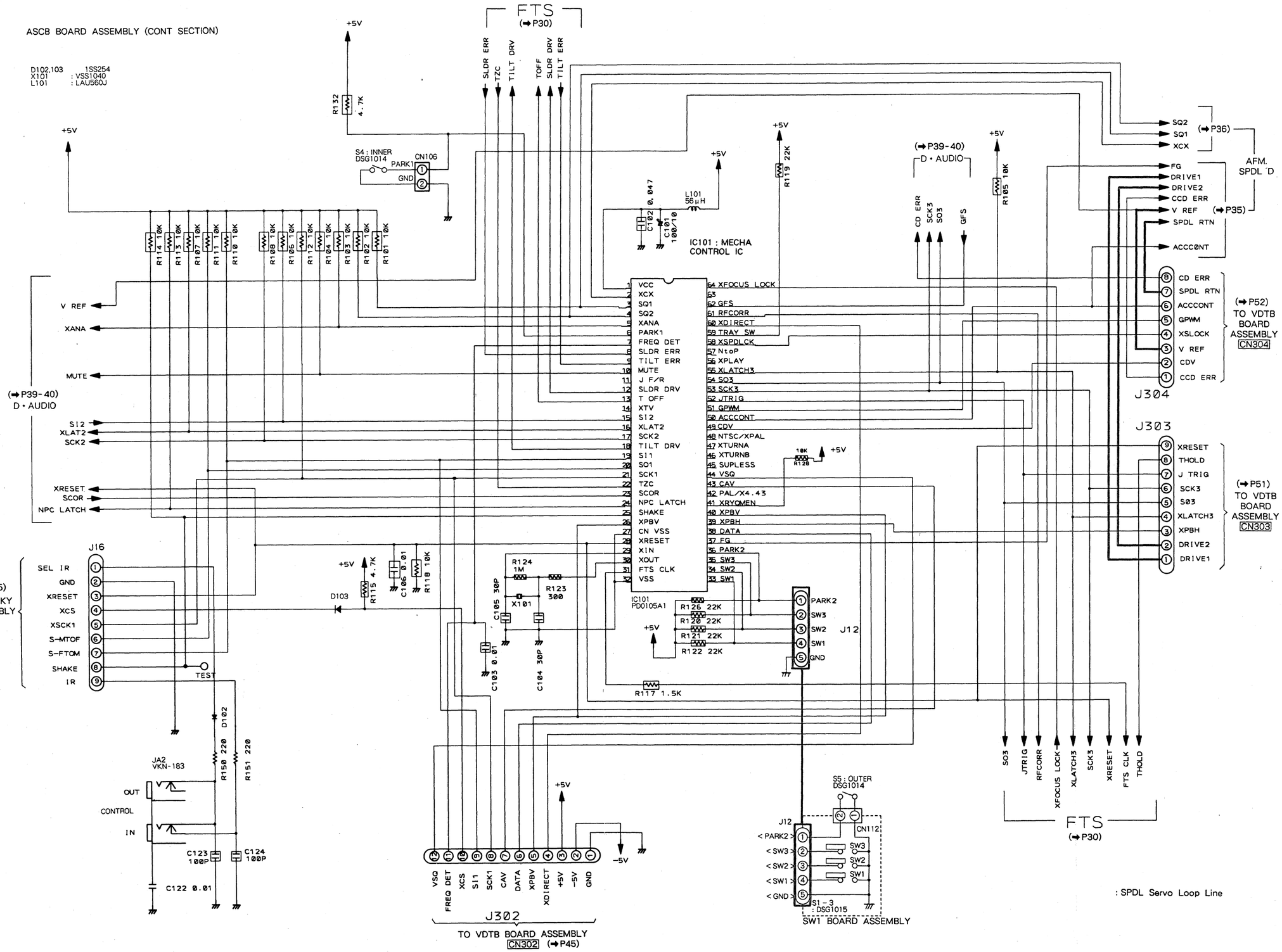


This P.C.B. connection diagram is viewed from the foil side.

5.7 ASCB (CONT SECTION) AND SW1 BOARD ASSEMBLIES

ASCB BOARD ASSEMBLY (CONT SECTION)

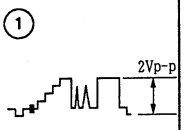
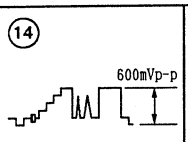
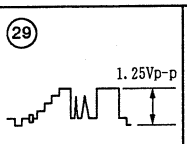
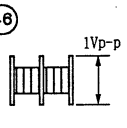
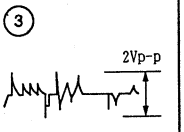
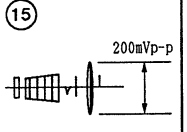
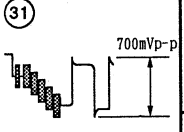
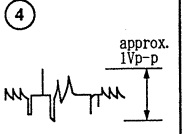
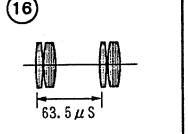
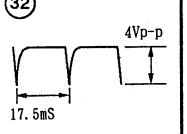
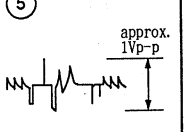
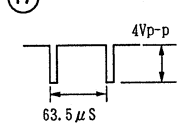
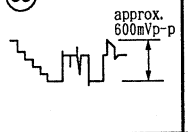
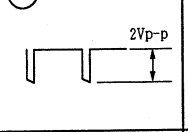
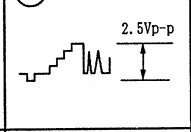
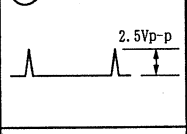
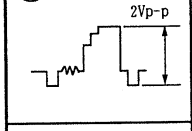
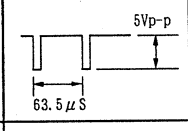
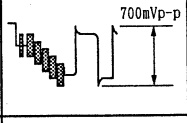
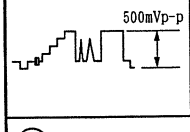
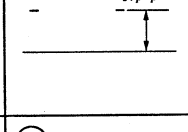
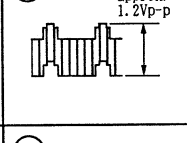
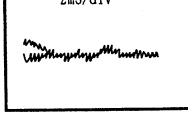
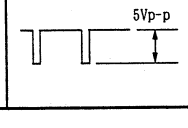
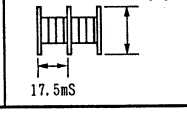
D102,103 : 1SS254
X101 : VSS1040
L101 : LAU560J



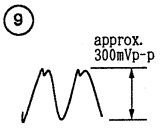
VDEM SECTION

Note: (No.) in the table correspond to the pin No.

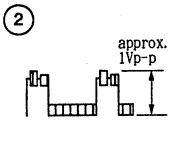
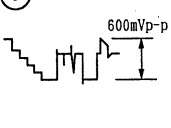
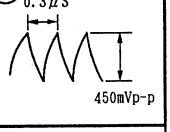
IC401 (PA5013A)

① 	⑭ 	㉙ 	㊻ 
③ 	⑮ 	㉛ 	
④ 	⑯ 	㉜ 	
⑤ 	⑰ 	㉝ 	
⑥ 	⑲ 	㉞ 	
⑦ 	㉓ 	㉟ 	
⑩ 	㉔ 	㊴ 	
⑪ 	㉕ 	㊹ 	

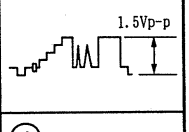
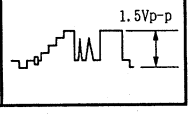
IC404 (PA0017)

⑨ 

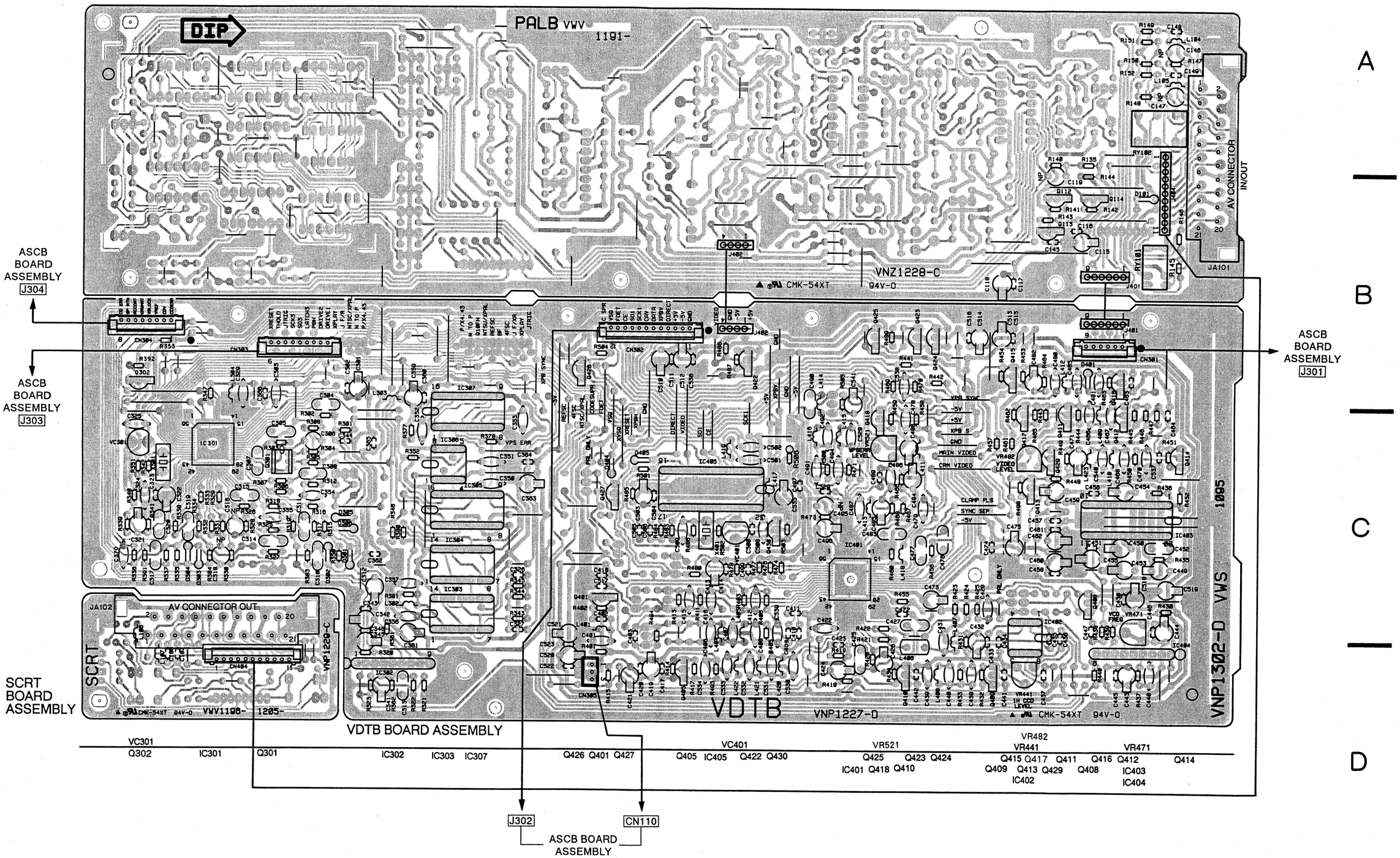
IC402 (PM0001)

② 
⑤ 
⑧ 

IC403(CXL1009P)

① 
④ 

PALB BOARD ASSEMBLY



(➡P51)
EF SC (TBC)

(➡P52)
CD ERR (TBC)

(➡P51)
B SYNC (TBC)
CHR2 (TBC)
S ERR (TBC)

S

S

R
GND
L
GND
+10V
VIDEO

(➡P40)
TO
ASCB
BOARD
ASSEMBLY
J301

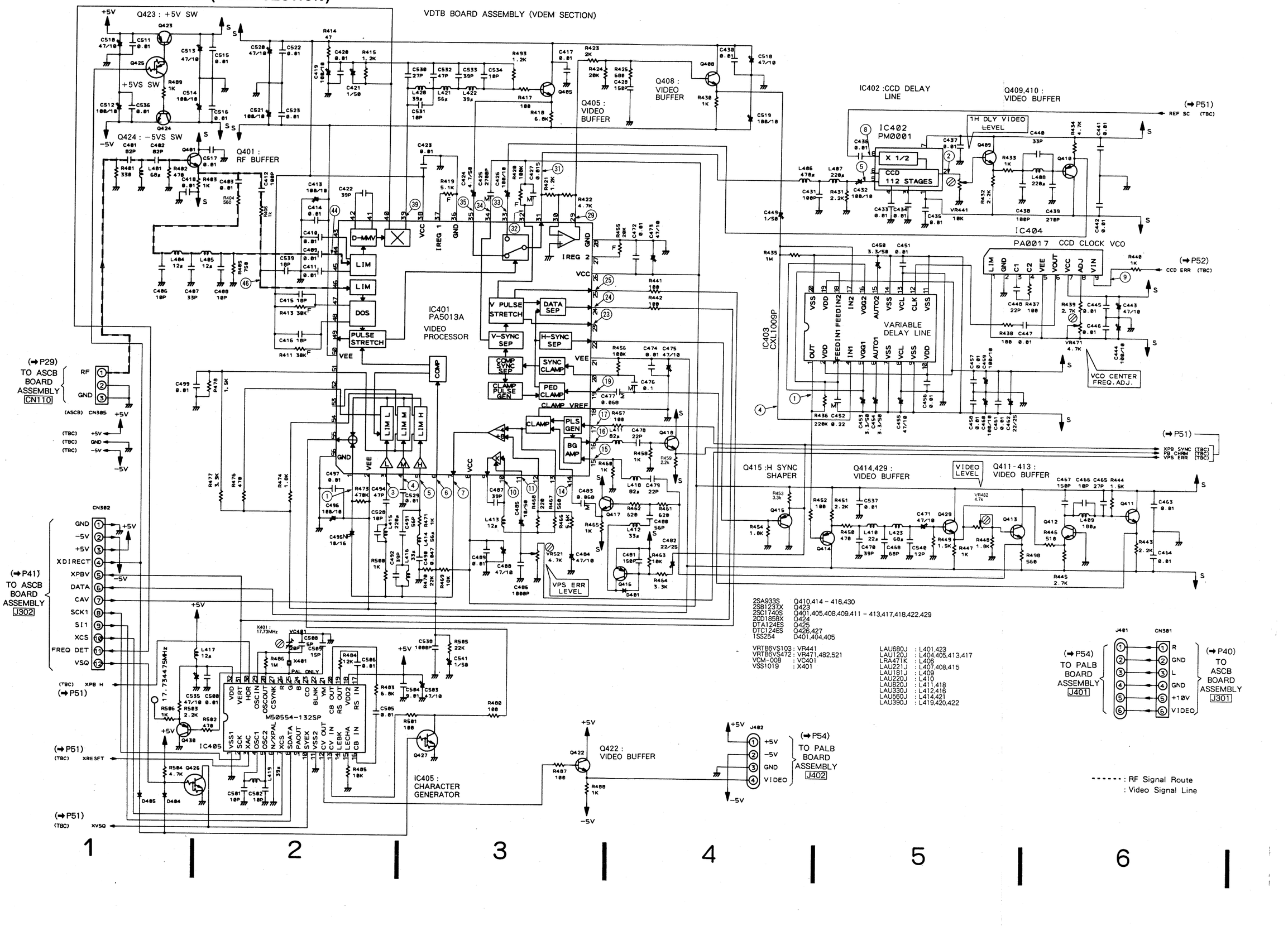
Route
nal Line

7 8 9 10 11 12

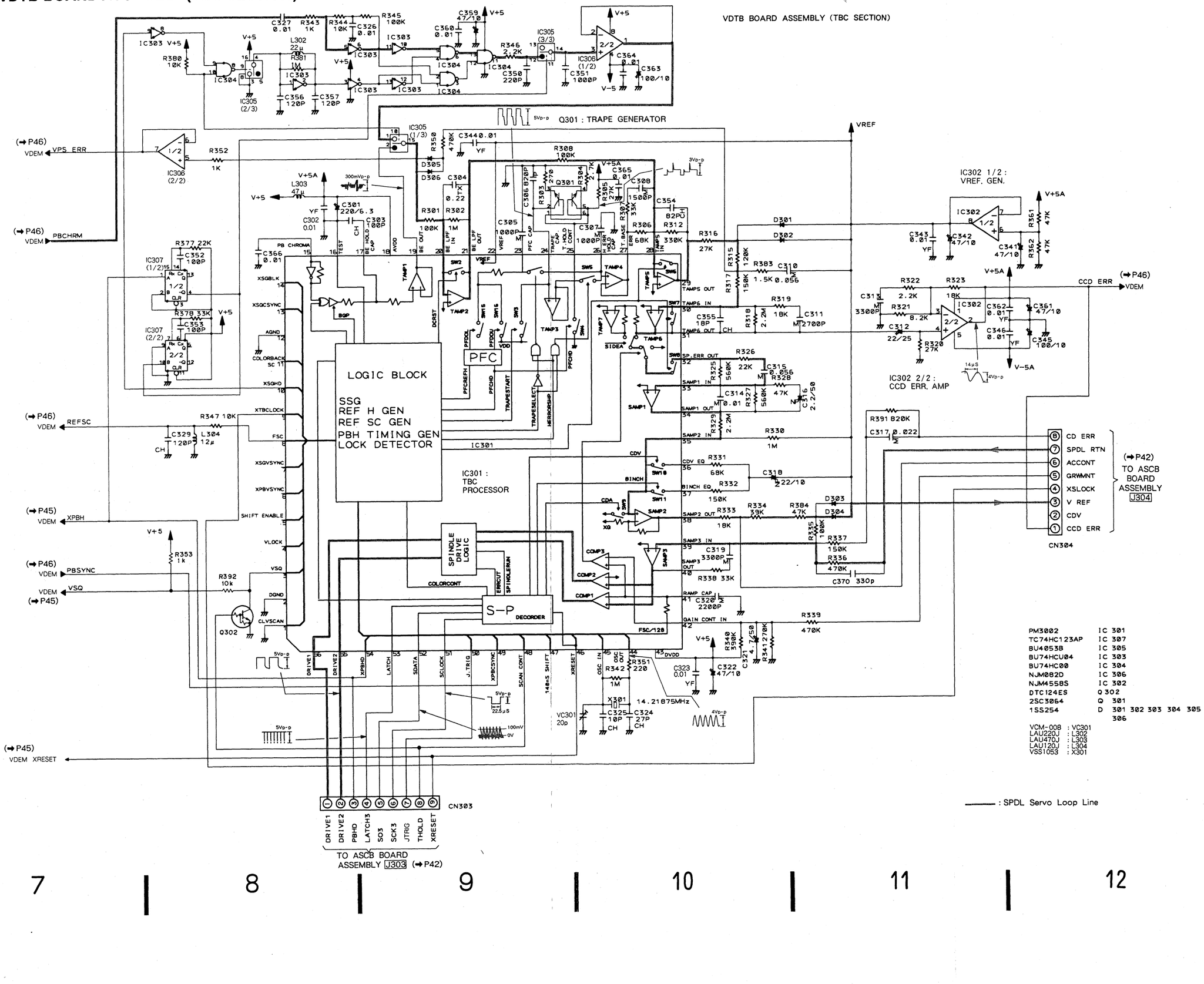
A B C D

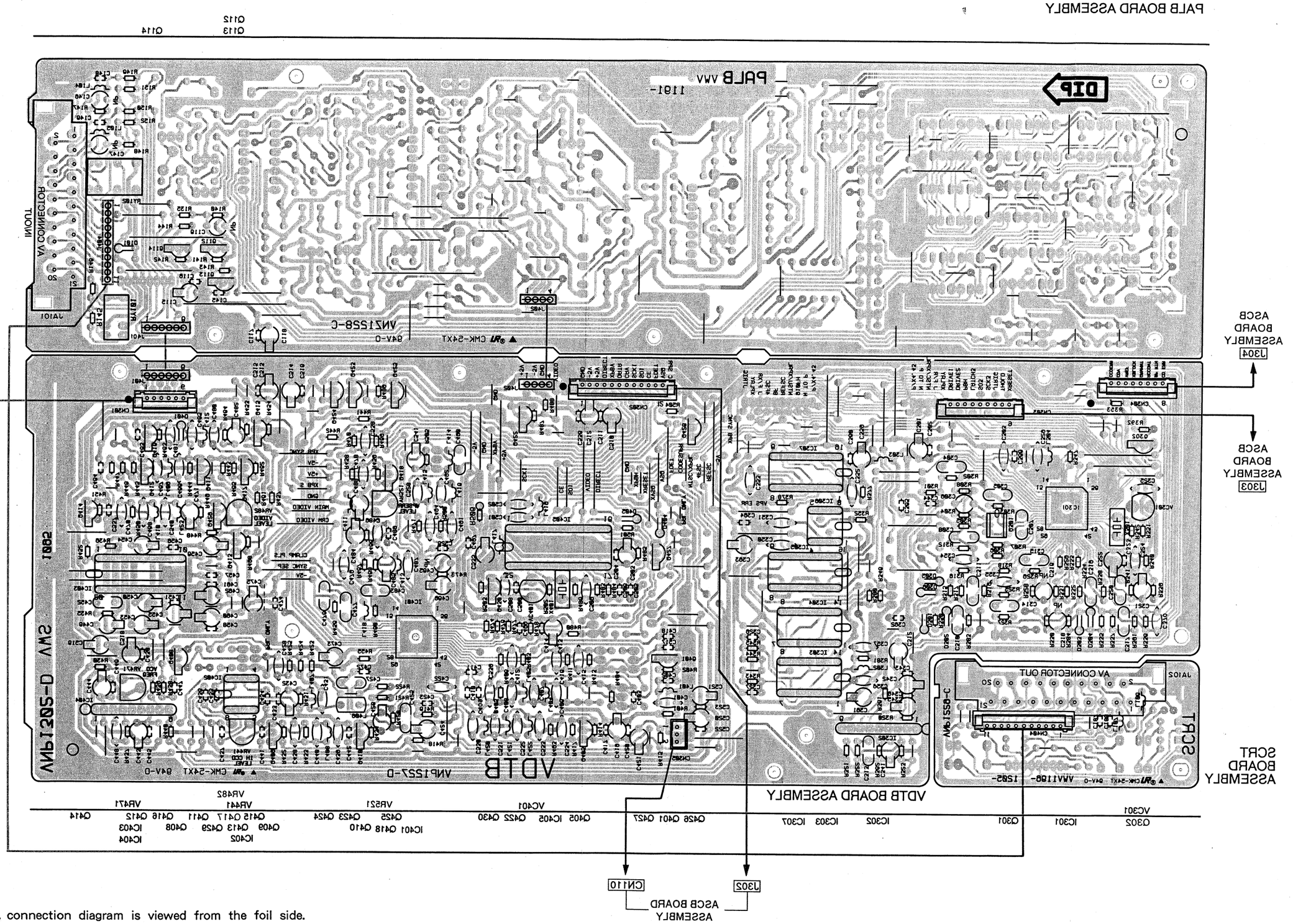
48

5.8 VDTB BOARD ASSEMBLY (VDEM SECTION)



5.9 VDTB BOARD ASSEMBLY (TBC SECTION)



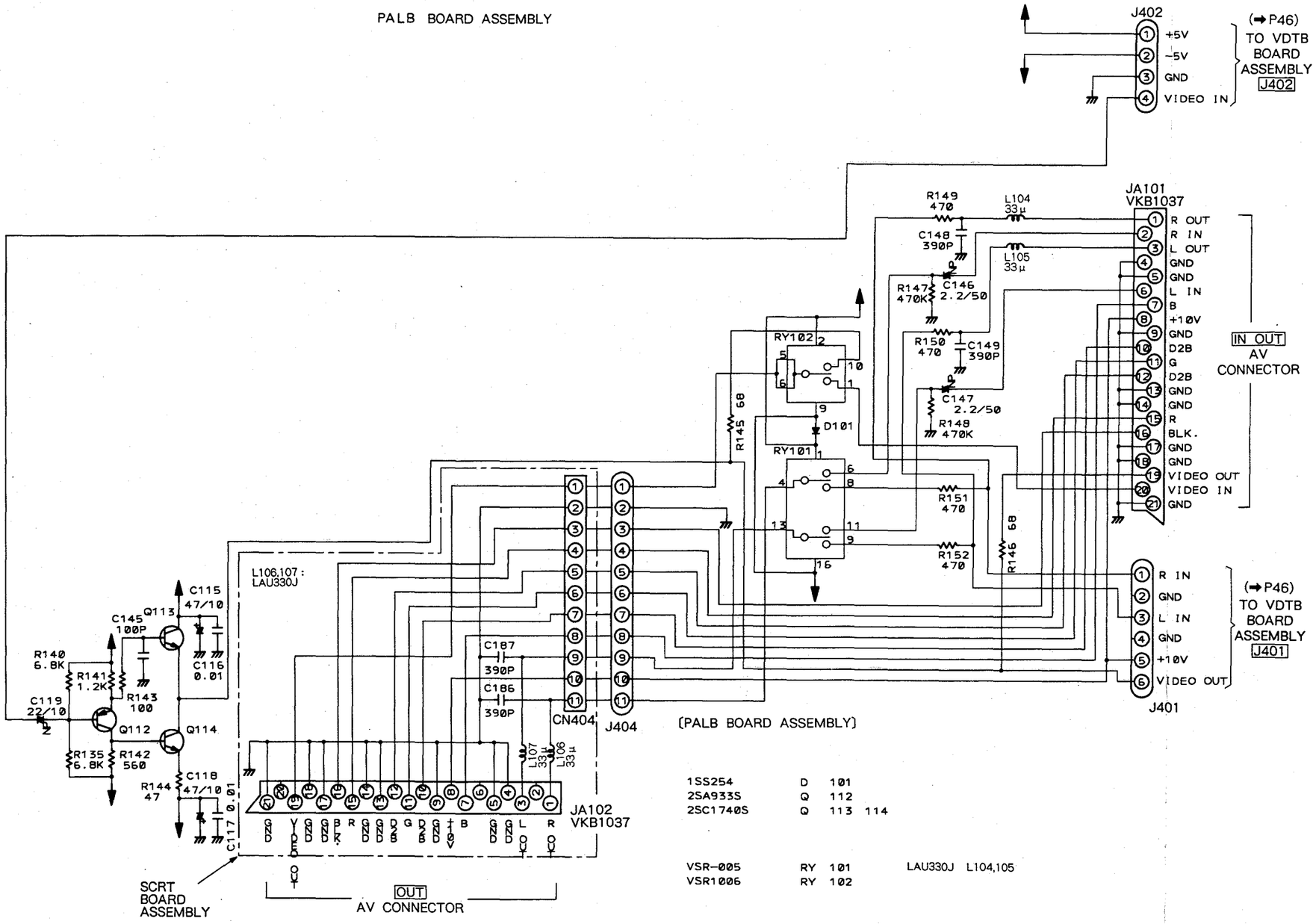


This P.C.B. connection diagram is viewed from the foil side.

5.10 PALB AND SCRT BOARD ASSEMBLIES

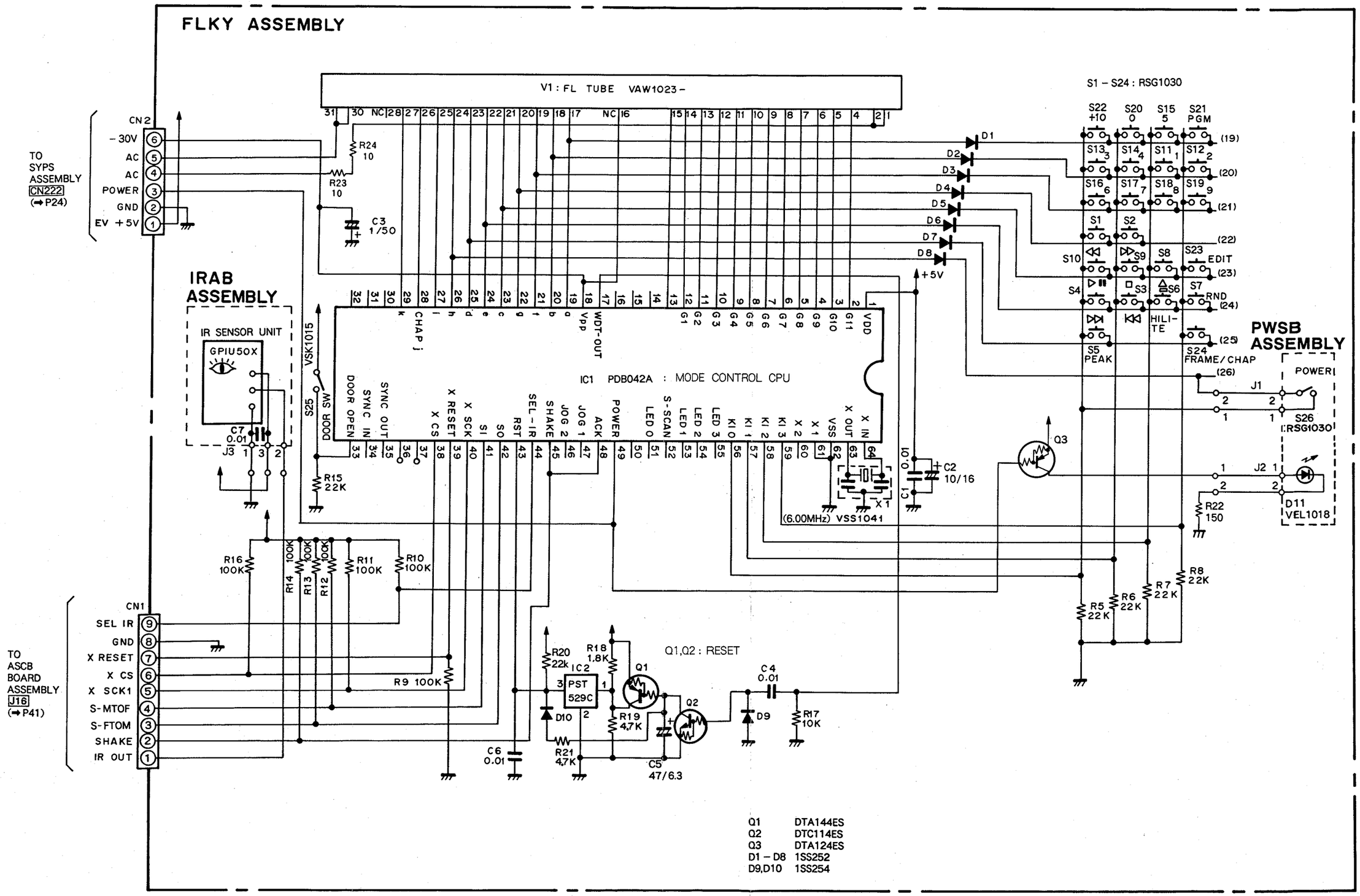
: Video Signal Line

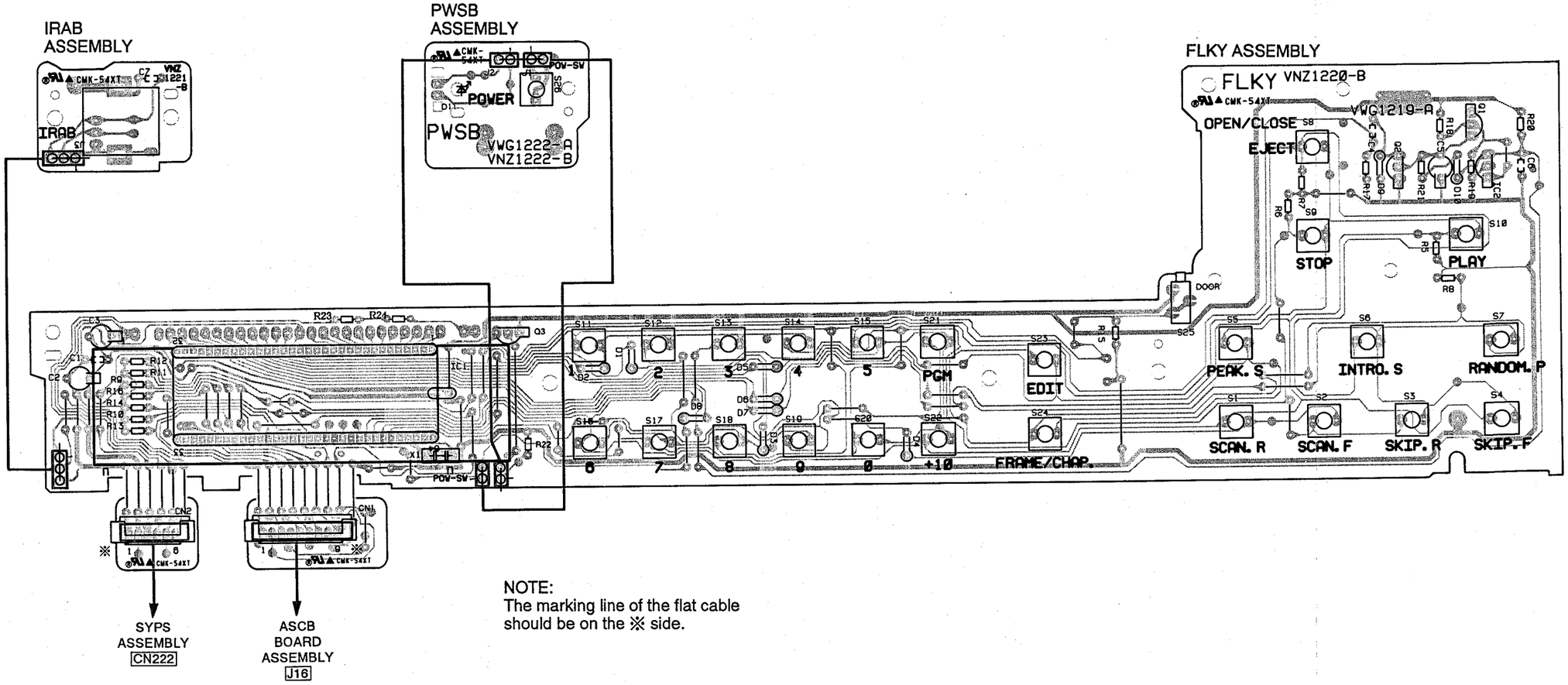
PALB BOARD ASSEMBLY



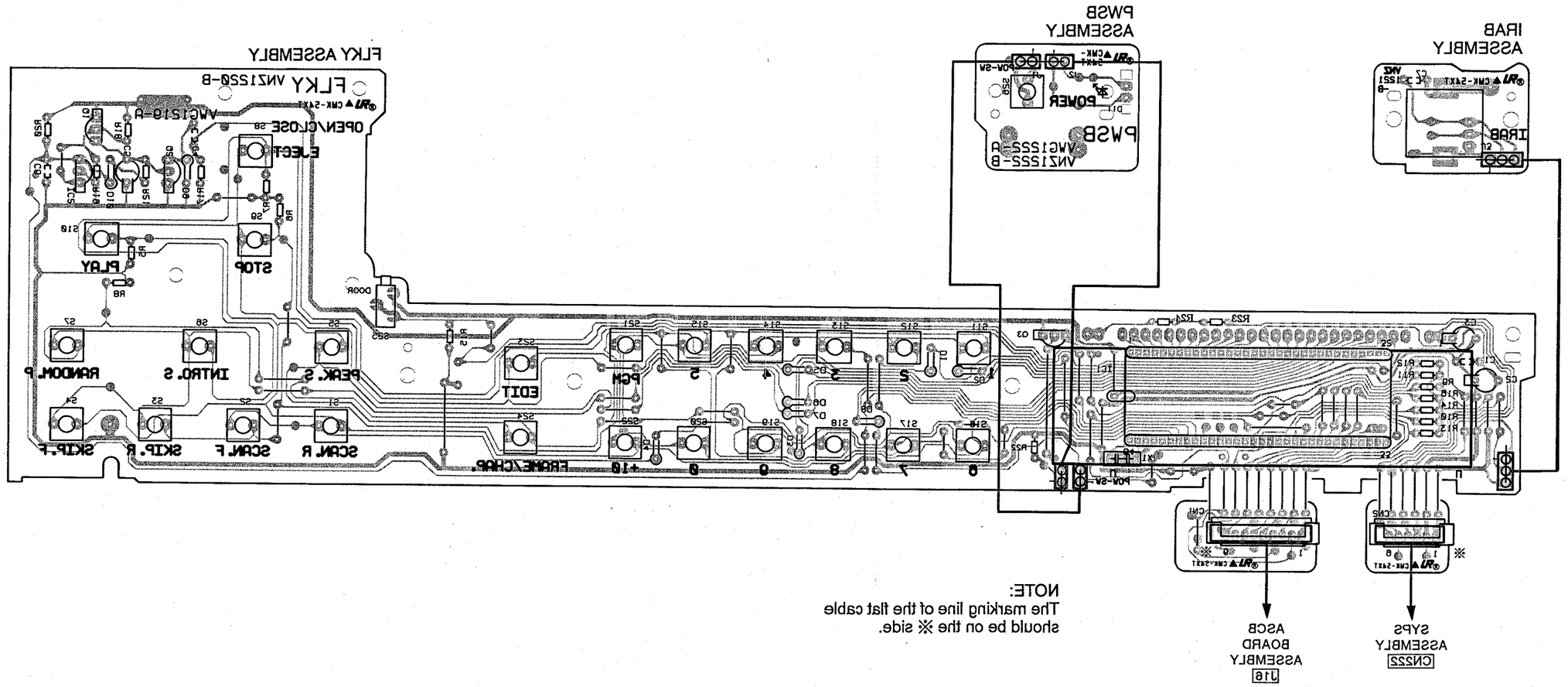
1SS254	D	101	
2SA933S	Q	112	
2SC1740S	Q	113	114
VSR-005	RY	101	LAU330J L104,105
VSR1006	RY	102	

5.11 FLKY, IRAB AND PWSB ASSEMBLIES





NOTE:
The marking line of the flat cable should be on the ※ side.



NOTE:
The marking line of the flat cable should be on the ※ side.

This P.C.B. connection diagram is viewed from the foil side.

6. ELECTRICAL PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω→56 × 10¹ →561 ····· *RD1/4PS 5 6 1 J*
47k Ω→47 × 10³ →473 ····· *RD1/4PS 4 7 3 J*
0.5 Ω→0R5 ····· *RN2H 0 R 5 K*
1 Ω→010 ····· *RS1P 0 1 0 K*

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω→562 × 10¹ →5621 ····· *RN1/4SR 5 6 2 1 F*

Miscellaneous Parts

Mark	Symbol & Description	Part No.
◉	MAIN board assembly ├ASCB board assembly ├FG board assembly └SW1 board assembly	VWM1164
◉	VTPB board assembly ├VDTB board assembly ├PALB board assembly └SCRT board assembly	VWM1168
◉	FLKB assembly ├FLKY assembly ├PWSB assembly └IRAB assembly	VWM1175
◉	SYPS assembly HEAD assembly	VWR1093
⚠	FU201, FU202 Fuse (T3.15A)	REK-105
⚠	FU203, FU204 Fuse (T1.25A)	REK-101
⚠	AC power cord	VDG1028
⚠	Strain relief	CM-22B
⚠	Power transformer	VTT1062
	S4, S5 Push switch (INNER, OUTER)	DSG1014
	Carriage motor assembly	VXX1261
	Loading motor assembly	VXX1262
	Spindle motor assembly	VXA1474
	Pre-pickup assembly	VXX1413
	Servo mechanism base assembly-S	VXX1583

◉ MAIN Board Assembly (VWM1164)

MAIN board assembly is composed of the ASCB, FG and SW board assemblies.

ASCB Board Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC802	BA15218N
	IC801	CXA1081S
	IC201	CXD2500AQ
	IC700	HA12127ANT
	IC804	LA6510L
	IC701	NJM4558D
	IC211,IC213	NJM5532SD
	IC205	NJM78L08A
	IC206	NJM79L08A
	IC101	PD0105A1
	IC803	PM3003
	IC209	SAA7350
	IC202	SM5840AP
	IC212,IC214	TC4S66F-TR
	IC204	M5218AP
	Q202,Q213,Q216,Q770,Q820,Q824, Q826,Q829,Q830,Q905	DTA124EK
	Q303,Q304	DTA124ES
	Q208,Q211,Q215,Q771,Q811, Q823,Q827,Q828,Q832,Q906	DTC124EK
	Q206,Q301	DTC124ES
	Q207,Q210,Q706,Q707,Q802,Q812, Q819,Q900	2SA1037K
	Q205,Q302,Q772,Q775	2SA933S
	Q816,Q818	2SB1185
	Q204	2SB1237X
	Q203,Q773,Q774	2SC1740S
	Q201,Q801,Q803-Q805,Q807,Q810, Q814,Q825,Q831	2SC2412K
	Q815,Q817	2SD1762

Mark	Symbol & Description	Part No.
	Q822	2SD1858X
	Q209,Q212	2SD2144S
	Q821	2SK184
	D201	FC54M
	D301	MTZ10C
	D802,D803	04AZ2.0-X
	D102,D103,D302,D705,D708,D770, D771,D801,D804-D807	1SS254

COILS AND FILTERS

Mark	Symbol & Description	Part No.
	L804	LAU100J
	L801,L803	LAU151J
	L802	LAU181J
	L101	LAU560J
	L221	LAU680J
	F701 B.P.F.(684kHz)	VTF1035
	F702 B.P.F.(1066kHz)	VTF1036

CAPACITORS

Mark	Symbol & Description	Part No.
	C293,C294	CCCCH221J50
	C253,C255,C269,C271	CCCCH390J50
	C871	CCCSL221J50
	C280,C330	CCCSL331J50
	C254,C256,C270,C272	CCCSL471J50
	C817,C899	CCSQCH050C50
	C123,C124,C722,C760,C810,C811, C822	CCSQCH101J50
	C232	CCSQCH220J50
	C724,C761	CCSQCH221J50
	C812,C815,C942	CCSQCH270J50
	C104,C105	CCSQCH300J50
	C717	CCSQCH360J50
	C804,C884,C929	CCSQCH470J50
	C750	CCSQCH620J50
	C809,C813	CCSQCH680J50
	C837,C844,C846	CCSQSL331J50
	C818	CCSQSL471J50
	C714,C748,C819	CCSQSL561J50
	C205,C866	CEANPR47M50
	C225,C807,C816,C845	CEANP010M50
	C745,C842,C863	CEANP100M16
	C850	CEANP2R2M50
	C716,C752,C755	CEANP220M10
	C351	CEANP3R3M16
	C870	CEANP470M10
	C728	CEASR47M50
	C808,C814,C823,C840	CEAS010M50
	C762,C855,C862,C864	CEAS100M50
	C101,C229,C248,C712,C729,C732, C746,C765,C859,C932,C939,C941, C945	CEAS101M10
	C281,C283,C331,C333,C350	CEAS101M25
	C227,C228,C744,C757,C835,C836, C841,C876,C877,C931,C938	CEAS220M25
	C242,C244	CEAS221M25
	C241	CEAS221M50
	C203,C208,C211,C216,C944	CEAS221M6R3
	C730	CEAS4R7M50
	C230,C246,C247,C249,C251,C257, C259,C261,C263,C265,C267,C273, C275,C713,C747,C857,C940	CEAS470M10
	C285,C335	CEAS470M25
	C723	CEJANP100M16
	C725	CEJA100M16
	C710,C824,C849,C865,C873	CFTNA103J50
	C754,C830,C838,C874,C878,C880	CFTNA104J50
	C883	CFTNA124J50
	C226,C843	CFTNA223J50
	C827,C867	CFTNA333J50
	C727,C764,C848,C869	CFTNA473J50
	C847,C868	CFTNA683J50
	C721,C759	CFTXA152J50
	C720,C758	CFTXA472J50
	C726,C763	CFTXA822J50
	C122	CKCYF103Z50
	C245	CKPUYB101K50
	C286,C336	CKPUYB331K50
	C252,C274	CKPUYF223Z25
	C346,C347,C858	CKPUYY103N16
	C711,C719,C731,C733,C753,C756	CKSQYB102K50
	C202	CKSQYB152K50
	C875,C879	CKSQYB562K50
	C854	CKSQYB821K50
	C103,C106,C206,C213,C218,C231, C234,C707,C708,C769,C771-C773, C803,C805,C828,C829,C856,C860, C861,C943	CKSQYF103Z50
	C204,C209,C212,C217,C288,C338, C344,C345,C872,C881,C882	CKSQYF104Z25
	C102,C201,C210,C258,C260,C262, C264,C266,C268,C276,C820,C821	CKSQYF473Z25
	C839	CQMA102J50
	C770	CQMA103J50
	C834	CQMA152J50
	C279,C329	CQMA222J50
	C774,C775	CQMA272J50
	C853	CQMA332J50
	C825	CQMA682J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR602,VR603 Semi-fixed (10kΩ)	VRTB6VS103
	VR601 Semi-fixed (2.2kΩ)	VRTB6VS222
	VR607 Semi-fixed (22kΩ)	VRTB6VS223
	VR608 Semi-fixed (33kΩ)	VRTB6VS333
	VR604-VR606,VR609 Semi-fixed (4.7kΩ)	VRTB6VS472
	R850,R862	RS1LMF3R3J
	R303	RS2LMF560J
	R150,R151,R214,R215,R220,R221, R251,R252,R254-R256,R258, R260-R267,R276,R278,R280-R287, R293,R301,R302,R304,R310-R313, R326,R328,R351,R352,R390-R394, R397,R781-R794,R849,R873,R874, R877,R910-R913,R923,R944, R946-R949,R951	RD1/6PM□□□J
	Other resistors	RS1/10S□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X101 Ceramic resonator (9.00MHz)	VSS1040
	X201 Crystal resonator (16MHz)	VSS1051
	CN201 5P top post	B5P-SHF-1AA
	CN103 23P top connector	VKN1073
	JA4 3P pin jack (VIDEO OUT, AUDIO OUT (L, R))	VKB1038
	JA2 2P mini jack (CONTROL (IN, OUT))	VKN-183

FG Board Assembly

OTHER

Mark	Symbol & Description	Part No.
	Photo interrupter	GP1S51

SW1 Board Assembly

SWITCHES

Mark	Symbol & Description	Part No.
	S1-S3 Push switch (LOADING/TILT)	DSG1015

◉ VTPB Board Assembly (VWM1168)

VTPB board assembly is composed of the VDTB, PALB and SCRT board assemblies.

VDTB Board Assembly

SEMICONDCTORS

Mark	Symbol & Description	Part No.
	IC305	BU4053B
	IC303	BU74HCU04
	IC304	BU74HC00
	IC403	CXL1009P
	IC405	M50554-132SP
	IC306	NJM082D
	IC302	NJM4558S
	IC404	PA0017
	IC401	PA5013A
	IC402	PM0001
	IC301	PM3002
	IC307	TC74HC123AP
	Q425	DTA124ES
	Q302,Q426,Q427	DTC124ES
	Q410,Q414-Q416,Q430	2SA933S
	Q423	2SB1237X
	Q401,Q405,Q408,Q409,Q411-Q413, Q417,Q418,Q422,Q429	2SC1740S
	Q301	2SC3064
	Q424	2SD1858X
	D301-D306,D401,D404,D405	1SS254

COILS AND FILTERS

Mark	Symbol & Description	Part No.
	L304,L404,L405,L413,L417	LAU120J
	L409	LAU181J
	L302,L410	LAU220J
	L407,L408,L415	LAU221J
	L412,L416	LAU330J
	L419,L420,L422	LAU390J
	L303	LAU470J
	L414,L421	LAU560J
	L401,L423	LAU680J
	L411,L418	LAU820J
	L406	LRA471K

CAPACITORS

Mark	Symbol & Description	Part No.
	VC301,VC401 Ceramic trimmer (20p)	VCM-008
	C508	CCCCH050C50
	C303,C352,C353,C412,C431,C438	CCCCH101J50
	C540	CCCCH120J50
	C329,C356,C357	CCCCH121J50
	C509	CCCCH150J50
	C428,C467,C481	CCCCH151J50
	C539	CCCCH180J50
	C448,C478,C479	CCCCH220J50
	C324,C465,C530	CCCCH270J50
	C407,C440	CCCCH330J50
	C422,C470,C487,C492,C533	CCCCH390J50
	C494,C532	CCCCH470J50
	C480,C491	CCCCH560J50
	C468	CCCCH680J50
	C354,C401,C402	CCCCH820J50
	C350	CCCSL221J50
	C439	CCCSL271J50
	C325,C406,C408,C466,C501,C502, C528,C531,C534	CCPUCH100J50
	C355,C415,C416	CCPUCH180J50
	C495	CEANP100M16
	C316	CEANP2R2M50
	C318	CEANP220M10
	C421,C449,C541	CEAS010M50
	C485	CEAS100M50
	C345,C363,C413,C419,C426,C432, C444,C459,C460,C496,C512,C514, C519,C521	CEAS101M10
	C312,C462,C482	CEAS220M25
	C301	CEAS221M6R3
	C450,C453,C454	CEAS3R3M50
	C321,C424	CEAS4R7M50
	C322,C341,C342,C359,C361,C443, C455,C471,C473,C475,C484,C488, C503,C510,C513,C518,C520,C535	CEAS470M10
	C314	CFTNA103J50
	C476	CFTNA104J50
	C427	CFTNA153J50
	C317	CFTNA223J50
	C304,C452	CTFNA224J50
	C490	CFTNA473J50
	C310,C315	CFTNA563J50
	C477,C483	CFTNA683J50
	C351,C486,C538	CKCYB102K50
	C370	CKPUYB331K50
	C302,C323,C326,C327,C343,C344, C346,C360,C362,C364-C366,C403, C409-C411,C414,C417,C418,C420, C423,C430,C433-C437,C441,C442, C445-C447,C451,C456-C458, C461,C463,C464,C472,C474,C489, C497,C499,C500,C504-C506,C511, C515-C517,C522,C523,C529,C536, C537	CKPUYY103N16
	C305,C307	CQMA102J50
	C308	CQMA152J50
	C320	CQMA222J50
	C311,C425	CQMA272J50
	C313,C319	CQMA332J50
	C306	CQPA821J100

RESISTORS

Mark	Symbol & Description	Part No.
	VR471,VR482,VR521 Semi-fixed (4.7kΩ)	VRTB6VS472
	VR441 Semi-fixed (10kΩ)	VRTB6VS103
	R411,R413,R419,R420,R455	RN1/6PQ□□□□F
	Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X401 Crystal resonator (17.734MHz)	VSS1019
	X301 Crystal resonator (14.22MHz)	VSS1053

PALB Board Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	Q112	2SA933S
	Q113,Q114	2SC1740S
	D101	1SS254

RELAYS

Mark	Symbol & Description	Part No.
	RY101 Relay	VSR-005
	RY102 Relay	VSR1006

COILS

Mark	Symbol & Description	Part No.
	L104,L105	LAU330J

CAPACITORS

Mark	Symbol & Description	Part No.
	C146,C147	CEANP2R2M50
	C119	CEANP220M10
	C115,C118	CEAS470M10
	C145	CKPUYB101K50
	C148,C149	CKPUYB391K50
	C116,C117	CKPUYY103N16

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	JA101 RGB connector (AV connector)(IN/OUT)	VKB1037

SCRT Board Assembly

COILS

Mark	Symbol & Description	Part No.
	L106,L107	LAU330J

CAPACITORS

Mark	Symbol & Description	Part No.
	C186,C187	CKPUYB391K50

OTHERS

Mark	Symbol & Description	Part No.
	JA102 RGB connector (AV connector)(OUT)	VKB1037

◉ FLKB Assembly (VWM1175)

FLKB assembly is composed of the FLKY, PWSB and IRAB assemblies.

FLKY Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC1	PDB042A
	IC2	PST529C
	Q3	DTA124ES
	Q1	DTA144ES
	Q2	DTC114ES
	D1-D8	1SS252
	D9,D10	1SS254

SWITCHES

Mark	Symbol & Description	Part No.
	S1-S24 Tact switch (PGM, DIRECT SEARCH (0-9, +10), DIRECT CD, SINGLE)	RSG1030
	S25 Door switch	VSK1015

CAPACITORS

Mark	Symbol & Description	Part No.
	C3	CEAL010M50
	C2	CEAL100M16
	C5	CEAL470M6R3
	C1,C4,C6	CKPUYY103N16

RESISTORS

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X1 Ceramic resonator (6.00MHz)	VSS1041
	FL spacer	VEB1162
	V1 Fluorescent indicator tube	VAW1023

PWSB Assembly

SIMICONDUCTOR

Mark	Symbol & Description	Part No.
	D11	VEL1018

SWITCH

Mark	Symbol & Description	Part No.
	S26 Tact switch (POWER)	RSG1030

IRAB Assembly

CAPACITOR

Mark	Symbol & Description	Part No.
	C7	CKPUYY103N16

OTHER

Mark	Symbol & Description	Part No.
	IR sensor unit	GP1U50X

◉ SYPS Assembly (VWR1093)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
⚠	IC201	ICP-N15
	IC202	ICP-N15
	IC206	ICP-N25
⚠	IC205	NJM78M05FA
	Q217	DTA114ES
	Q213	DTC114ES
	Q214,Q219	2SA933S
	Q202,Q203,Q205	2SB1185
⚠	Q207	2SB1238X
	Q218	2SC1740S
	Q201,Q204,Q206	2SD1762
	D220	MTZJ22C
	D102,D104	MTZJ5.1C
	D101,D103	MTZJ5.6B
⚠	D201,D202	S2VB20
⚠	D213,D214	1SR35-100AVL
	D222,D223	1SR35-100AVL
	D208,D209	1SS252
⚠	D216,D217	1SS252
	D212,D215	10ELS2

COILS

Mark	Symbol & Description	Part No.
⚠	L202 Line filter	VTL-157
⚠	L201 Coil (10mH)	VTL1008

CAPACITORS

Mark	Symbol & Description	Part No.
	C209,C210,C226,C231,C232,C242, C245	CEAS101M10
	C223	CEAS101M25
	C219	CEAS101M35
	C235	CEAS102M25
	C214,C215	CEAS2R2M50
	C240,C243	CEAS221M10
	C213	CEAS471M35
	C208	CEAS472M10
	C207	CEAS682M10
	C212,C237,C238	CGCYX473M25
	C196-C199,C246	CKCYF103Z50
	C241,C244	CKPUYB102K50
	C201-C204	CKPUYF103Z25
⚠	C216,C217 (0.01 μ)	VCG-048
	C205,C206 (3300/25V)	VCH1095

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R221	RS1LMFR51J
	R239	RS1LMF4R7J
	R231 Fusible (22Ω)	VCN1029
	Other resistors	RD1/6PM□□□J

HEAD Assembly

CAPACITORS

Mark	Symbol & Description	Part No.
	C1	CKSQYF473Z50
	C5	CKSYF105Z16

RESISTOR

Mark	Symbol & Description	Part No.
	VR1 Semi-fixed (10kΩ)	VCP1040

7. FOR HB TYPE

NOTES:
- *Parts without part number cannot be supplied.*
- *Parts marked by " ◉ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

8.1 CONTRAST OF MISCELLANEOUS PARTS

The CLD-600/HB type is the same as the CLD-600/HEZ type with the exception of the following sections.

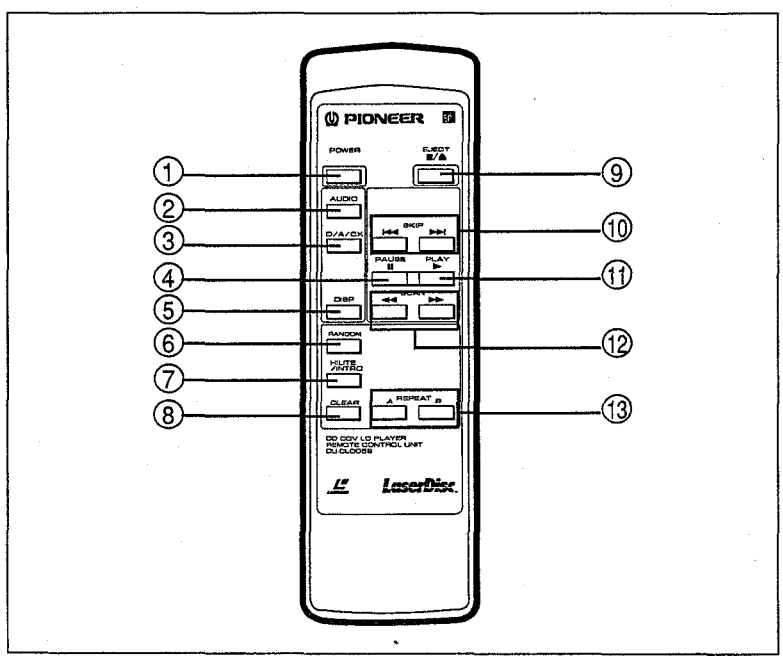
Mark	Symbol & Description	Part No.		Remarks
		HEZ type	HB type	
◉	SYPS assembly	VWR1093	VWR1092	
⚠	AC power cord	VDG1028	VDG1029	
	Packing case	VHG1157	VHG1158	For packing
	Operating instructions (English/French/German/Italian)	VRE1005	• • • • •	
	Operating instructions (Dutch/Swedish/Spanish/Portuguese)	VRF1010	• • • • •	
	Operating instructions (English)	• • • • •	VRB1053	

SYPS ASSEMBLY (VWR1092)

The SYPS assembly (VWR1092) is the same as the SYPS assembly (VWR1093) for the service supply parts.

8. PANEL FACILITIES

Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.



① **POWER button**
Press to turn the power on and off.
② **AUDIO button**
③ **D/A/CX button**
④ **PAUSE button**
⑤ **DISP button**
⑥ **RANDOM button**
⑦ **HILITE/INTRO button**
⑧ **CLEAR button**
Used to clear the repeat mode, program mode, random play mode or hi-lite scan/intro scan mode. This button is also for use in correcting input digits.
⑨ **EJECT button**
⑩ **SKIP buttons**
⑪ **PLAY button**
⑫ **SCAN buttons**
⑬ **REPEAT A/B buttons**

9. SPECIFICATIONS

1. General

System ..... LaserVision Disc system and Compact Disc digital audio system
Laser ..... Semiconductor laser wavelength 780 nm
Power requirements ..... AC 220 V, 50/60 Hz
Power consumption ..... 42 W
Weight ..... 7.9 kg
Dimensions ..... 420 (W) x 406 (D) x 122 (H) mm
Operating temperature ..... +5°C ~ +35°C (41°F - 95°F)
Operating humidity ..... 5% ~ 90%
(There should be no condensation of moisture.)

2. Disc

LaserVision Discs

*Maximum playing times
30 cm active play disc ..... 72 min/both sides
30 cm long play disc ..... 2 hours/both sides
20 cm active play disc ..... 28 min/both sides
14 min/one side
20 cm long play disc ..... 40 min/both sides
20 min/one side

Spindle motor speed
Active play disc ..... 1,500 rpm
Long play disc ..... 1,500 rpm (inner circumference) to 570 rpm (outer circumference)
(For a 30 cm disc)

Compact Discs

DISC ..... Diameter: 12 cm, 8 cm, Thickness: 1.2 mm
Rotation direction (pickup side) ..... Counterclockwise
Liner speed ..... 1.2 ~ 1.4m/sec
*Maximum playing time
74 min. 12 cm discs
20 min. 8 cm discs
(For stereo playback)

Compact Discs with Video

Disc ..... Diameter: 12 cm, Thickness: 1.2 mm
Rotation direction (pickup side) ..... Counterclockwise
Linear speed ..... Audio portion: 1.2 ~ 1.4m/sec
Video portion: 11 ~ 12m/sec
*Maximum playing time ..... Video portion: 5 min. (CLV)
Audio portion: 20 min. (Digital)

** Actual playback time differs for each disc.*

3. Video characteristics

Format ..... PAL specifications
Video output
Level ..... 1 Vp-p nominal, sync. negative, terminated
Impedance ..... 75Ω unbalanced
Jack ..... RCA jack

4. Audio characteristics

Output level
During analog audio output ..... 200 mVrms (1 kHz, 40%
During digital audio output ..... 200 mVrms (1 kHz, -20 dB
Jacks ..... Both RCA jacks
Number of channels .....

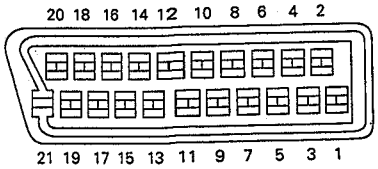
Digital Audio Characteristics

Frequency response	4 Hz - 20 kHz (±0.5 dB) (EIAJ)
SN ratio	104 dB (EIAJ)
Dynamic range	95 dB (EIAJ)
Channel separation	94 dB (EIAJ)
Total harmonic distortion	0.003% (EIAJ)
Wow and flutter	Limit of measurement (EIAJ)

5. Other Terminals

Control input/output ..... Both miniature jack
AV connector output ..... 21-pin connect
This connector provides the video and audio signals f connection to a colour video TV monitor (or TV set) whic has a "AV CONNECTOR" terminal.

PIN assignment



PIN no.		
1	Audio 2/R out	17 GND
3	Audio 1/L out	19 Video out
4	GND	21 GND
8	Status	

6. Accessories

Remote control unit (CU-CLD059) .....
Size "AAA" (IEC R03) dry cell batteries .....
Euroconnector cable .....
Audio cord .....
Operating instructions .....
Warranty card .....

7. Functions

Remote control unit operations (CU-CLD059)

	Function	Active play Disc (CAV)	Long play Disc (CLV)	Compact Disc with Video	Compact Disc
Basic Functions	Single-side play	YES	YES	YES	YES
	Pause	YES	YES	YES	YES
	Stop	YES	YES	YES	YES
Search	Fast forward (forward and reverse)	YES	YES	YES	YES
	Chapter/Track skip	YES	YES	YES	YES
	Direct chapter/Track number search	YES	YES	YES	YES
	Frame number search	YES	NO	NO	NO
	Time number search	NO	YES	YES	YES
	Absolute time search	NO	NO	NO	YES
Program	Chapter/Track program play	YES	YES	YES	YES
	Program correction	YES	YES	YES	YES
Repeat	Repeat between 2 points	YES	YES	YES	YES
	Memory repeat	YES	YES	YES	YES
	Chapter/Track repeat	YES	YES	YES	YES
	One-side repeat	YES	YES	YES	YES
	Program repeat	YES	YES	YES	YES
	Random repeat	YES*1	YES*1	YES	YES
	Program random repeat	YES	YES	YES	YES
Time display	Elapsed time display	NO	YES	YES	YES
	Absolute time display	YES*1	NO	NO	YES
	Remaining track time display	NO	NO	YES	YES
	Remaining total time display	YES*1	YES*1	YES	YES
	Total number of selections, total time display	YES*1	YES*1	YES	YES
Others	Hi-Lite scan	NO	NO	YES*3	YES
	Intro scan	YES	YES	YES*4	NO
	CX system ON/OFF	YES*2	YES*2	NO	NO
	Audio channel selection (Stereo, 1/L, 2/R)	YES	YES	YES	YES

*1 Only discs with TOC

*2 Valid for analog sound playing a disc with the CX mark.

*3 Audio part only

*4 Video part only

NOTE:

The specifications and design of this product are subject to change without notice, due to improvement.

PLAYER FUNCTIONS

- Display, Visual Calendar Display
- Intro Scan, Hi-Lite Scan, Random Playback, Program Random Playback and Compu Program/Auto Program Edit
- Digital Sound for LaserVision Discs
- Last Memory

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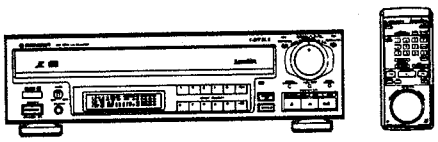
The Art of Entertainment

Service Manual



ORDER NO.
ARP2308

CD CDV LD PLAYER

CLD-1600

- **This manual is applicable to the HEZ type.**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

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IFJ JULY. 1991 Printed in Japan

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1. SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VAROITUS!
LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTÖNTÄ, SILMILLE VAARALLISTA LASERSÄTEILYÄ.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING
DENNA APPARAT INNEHÅLLER EN LASER MED HÖGRE EFFEKT ÄN KLASS 1. TAG INTE AV HÖLJET ELLER FÖRSÖK GÖRA INGREPP I APPARATEN. ÖVERLAT SERVICE TILL KVALIFICERAD PERSONAL.

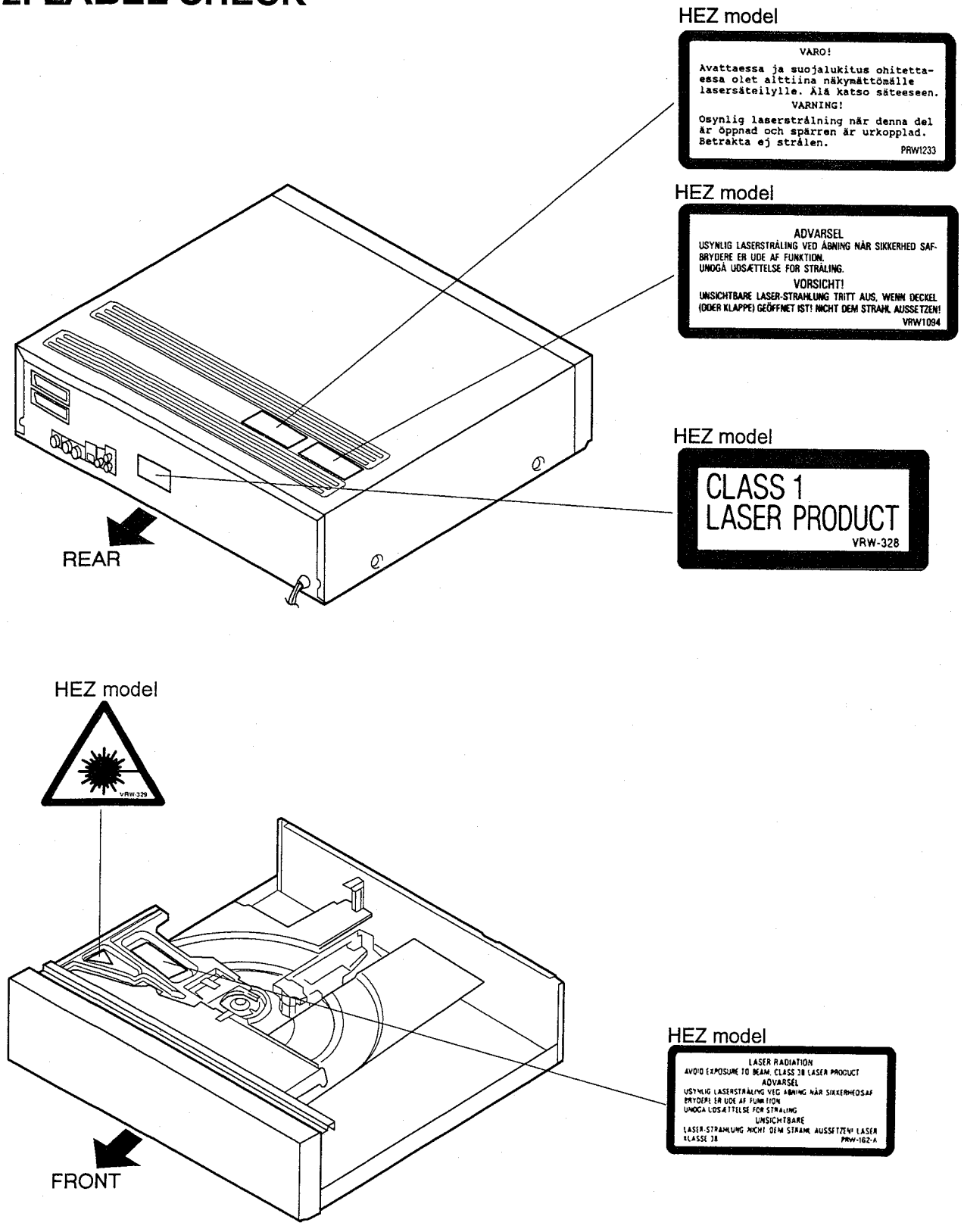
LASER
Kuva 1
Lasersateilyn
varoitusmerkki

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER
Picture 1
Warning sign for
laser radiation

2. LABEL CHECK



3. PACKING, EXPLODED VIEWS AND PARTS LIST

NOTES:

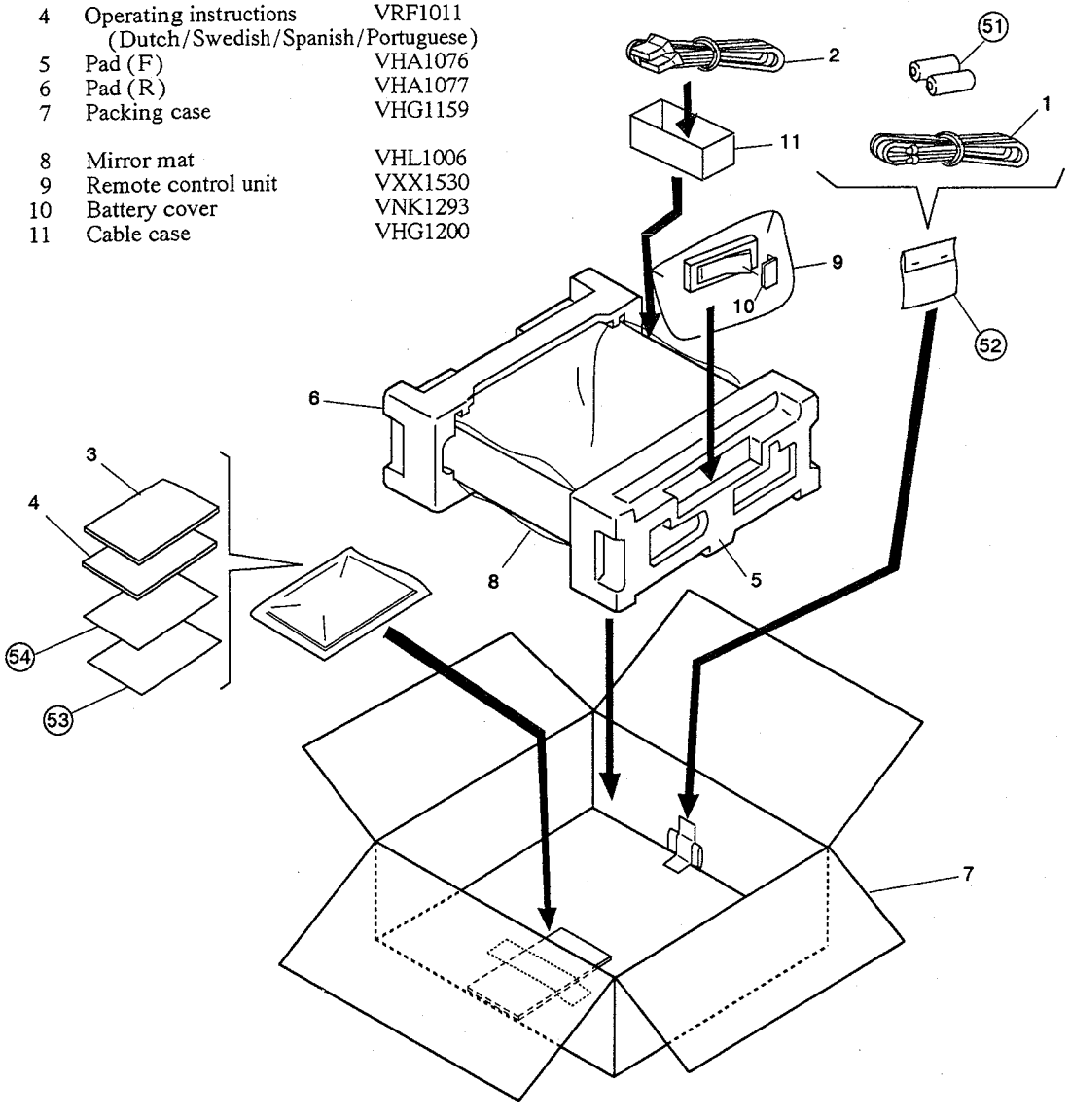
- *The Parts with an encircled number are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by " ◉ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

3.1 PACKING

Parts List

Mark	No.	Description	Part No.
	1	Connection cord	VDE-055
	2	Euroconnector cable (SCART ⟷ SCART)	VDE1022
	3	Operating instructions (English/French/German/Italian)	VRE1006
	4	Operating instructions (Dutch/Swedish/Spanish/Portuguese)	VRF1011
	5	Pad (F)	VHA1076
	6	Pad (R)	VHA1077
	7	Packing case	VHG1159
	8	Mirror mat	VHL1006
	9	Remote control unit	VXX1530
	10	Battery cover	VNK1293
	11	Cable case	VHG1200

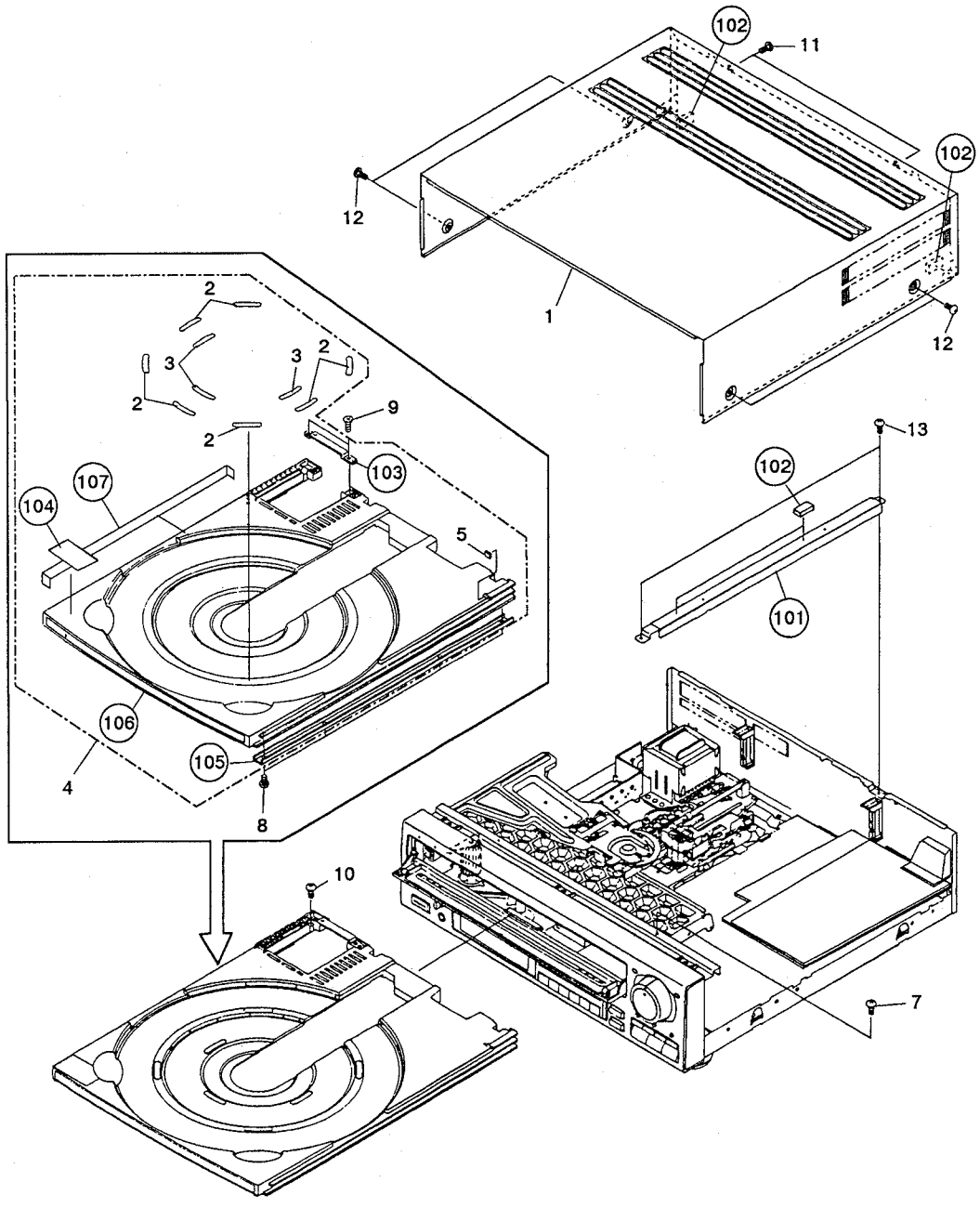
Mark	No.	Description	Part No.
	51	Dry cell battery (R03, AAA)	VEM-022
	52	Polyethylene bag	VHL-014
	53	Caution card	VRR1008
	54	Caution card (EW)	VRM1027



3.2 EXTERIOR SECTION

Parts List

Mark	No.	Description	Part No.
	1	Bonnet S	VXX1267
	2	Disc pad(L)	VEC1191
	3	Disc pad(S)	VEC1192
	4	Tray assembly	VXX1453
	5	Tray rubber	VEB1089
	6	• • • • •	
	7	Screw	PCZ30P080FMC
	8	Screw	BPZ30P080FCU
	9	Screw	CPZ30P100FMC
	10	Screw	BPZ30P140FMC
	11	Screw	BBZ30P080FCC
	12	Screw	BCZ40P060FZK
	13	Screw	BBZ30P060FCC
	101	Center angle	VNE1305
	102	Cushion	VEC1004
	103	Tray angle	VNE1309
	104	Carry label	VRW1058
	105	Tray reinforced plate	VNE1528
	106	Tray	VNK1354
	107	Side plate	VNE1362



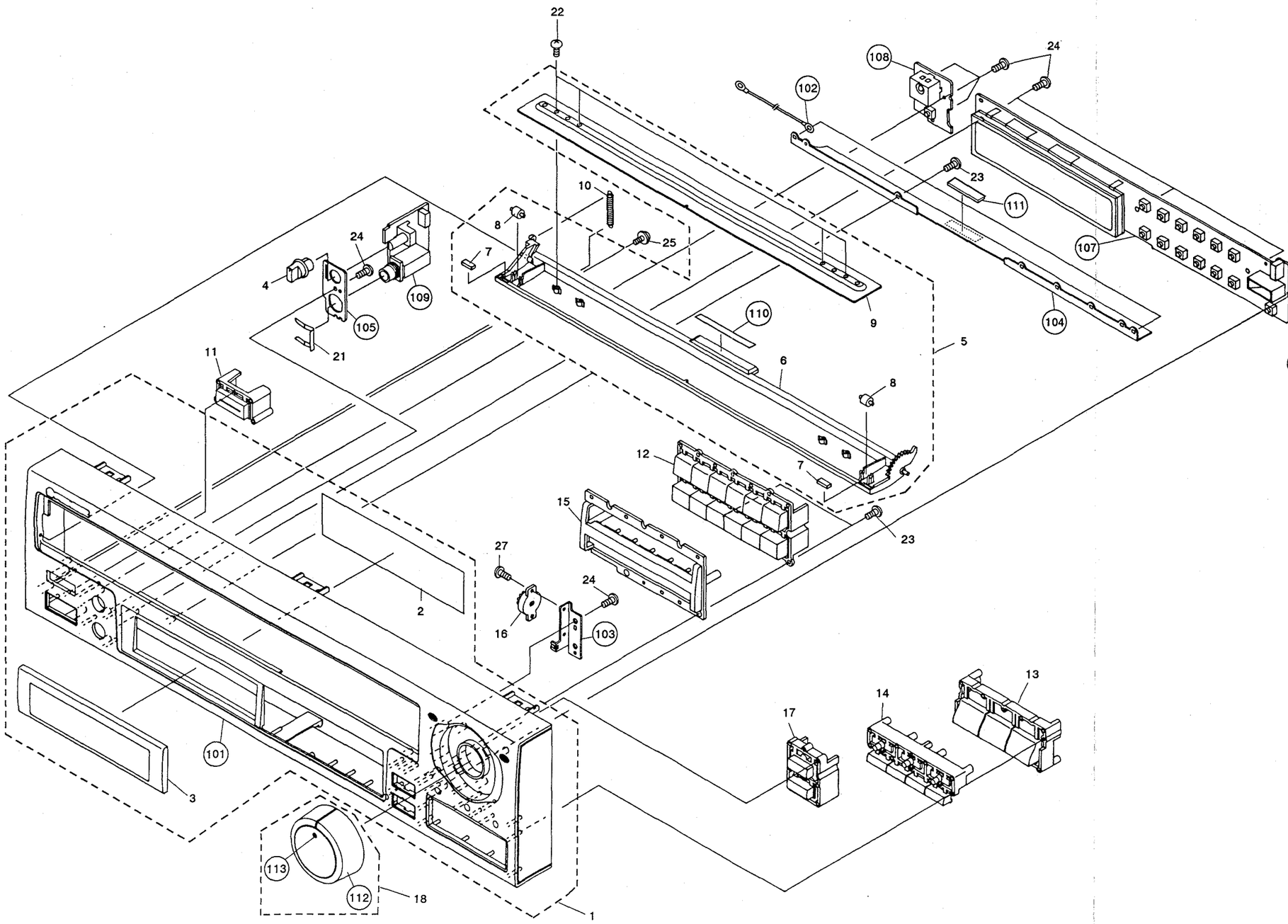
3.3 FRONT PANEL SECTION

Parts List

Mark	No.	Description	Part No.
	1	Front panel assembly S	VXX1650
	2	FL filter	VNK1694
	3	FL lens	VNK1660
	4	Volume knob	VNK1658
	5	Door assembly-S	VXX1633
	6	Front door assembly	VXA1572
	7	Door dump rubber	VEB1033
	8	Roller	VNL1042
	9	Door plate	VNE1482
	10	Door spring	VBH1169
	11	PW button	VNK1649
	12	Ten key	VNK1653
	13	Main key	VNK1654
	14	Sub key	VNK1655
	15	Sub panel	VNK1661
	16	Dumper assembly	VXA1053
	17	L key assembly	VXA1573
	18	Scan dial assembly	VXA1574
	19	• • • • •	
	20	• • • • •	
	21	Snap plate	VNE1102
	22	Screw	BPZ20P040FZK
	23	Screw	BBZ20P050FMC
	24	Screw	BPZ26P060FCU
	25	Screw	IPZ26P060FMC
	26	Screw	BPZ26P080FMC
	27	Screw	PMZ20P040FCU

Mark	No.	Description	Part No.
	101	Front panel assembly	VXA1652
	102	Earth lug assembly	VDA1352
	103	Dumper plate	VNA1608
	104	Reinforced plate	VNE1610
	105	Jack holder	VNE1609
	106	SHKY assembly	VWG1204
	107	FLKY assembly	VWG1218
	108	PSWB assembly	VWG1221
	109	HEPB assembly	VWV1186
	110	Spacer	VEC1488
	111	Dump rubber	VEB1166
	112	Scan dial	VNK1656
	113	LED lens(S)	VNK1657

Note: 106 SHKY, 107 FLKY, 108 PSWB and 109 HEPB assemblies are supplied for service as the FLKB assembly (VWM1174).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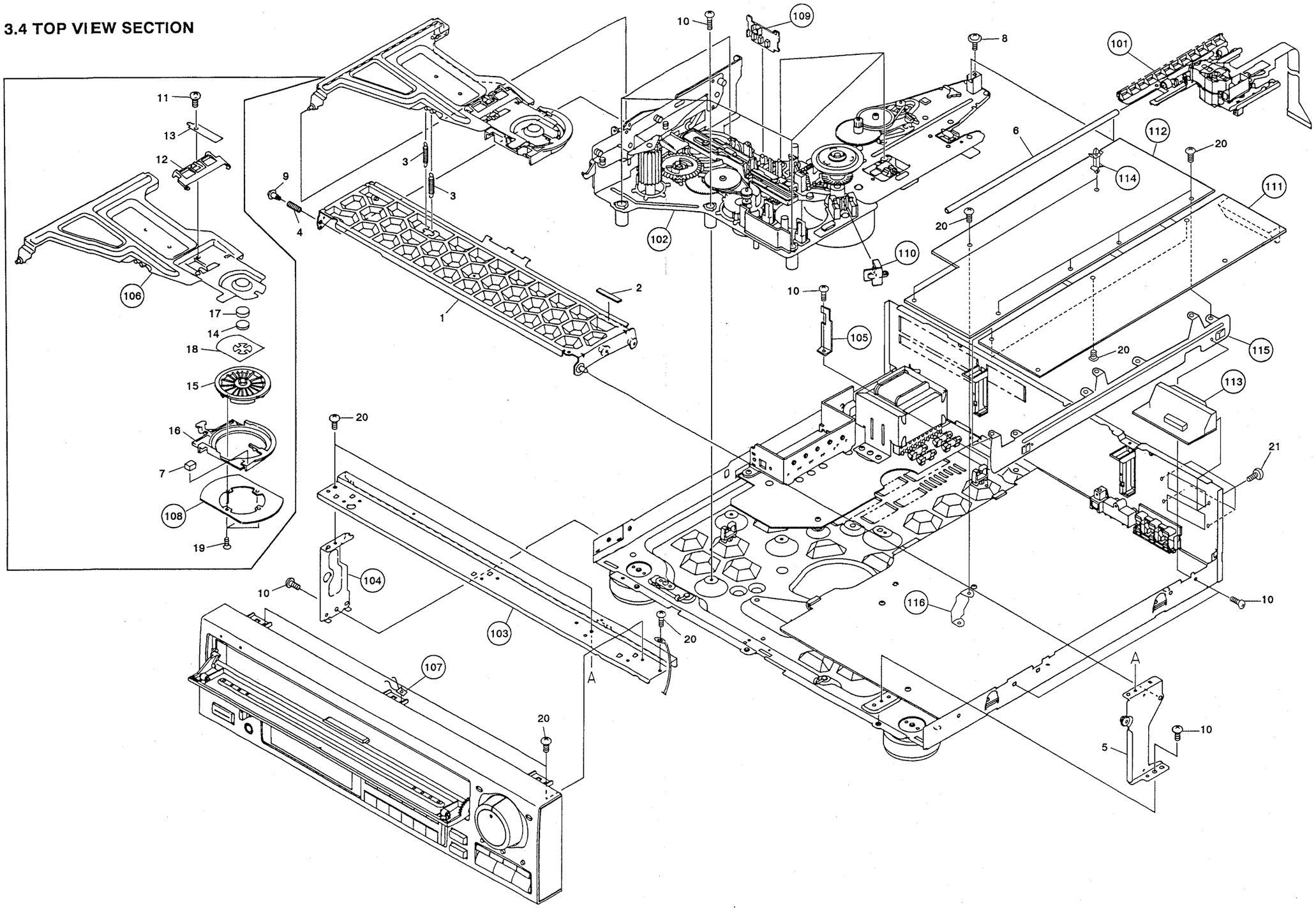
3.4 TOP VIEW SECTION



Parts List

Mark	No.	Description	Part No.
	1	Clamper arm (A) assembly	VXA1319
	2	Rubber (A)	VEB1084
	3	Clamper spring	VBH1094
	4	Arm spring	VBH1093
	5	Side stay (R) assembly	VXA1529
	6	Carriage shaft	VLL1177
	7	Clamper pad	VEC1264
	8	Screw (B)	VBA1018
	9	Screw (B)	VBA1008
	10	Screw	BBZ30P060FCC
	11	Screw	BBZ30P060FMC
	12	Parallel link	VNL1254
	13	Plate spring	VBK1014
	14	Ball holder	VNL1289
	15	Clamper S	VNL1248
	16	Clamper holder	VNL1205
	17	Rubber sheet	VEB1114
	18	Thrust holder	VBK1018
	19	Screw	CPZ20P050FMC
	20	Screw	IBZ30P060FCC
	21	Screw	BBZ30P080FCC

Mark	No.	Description	Part No.
	101	Rack assembly	VWT1061
	102	Mechanism assembly	VWT1076
	103	Front angle	VNE1304
	104	Side stay (L)	VNE1306
	105	SM head holder	VNE1592
	106	Clamper arm (B)	VNE1308
	107	Earth plate	VNE1518
	108	Stabilizer	VNE1333
	109	SW1 board assembly	VWG1212
	110	FG board assembly	VWG1214
	111	PALB board assembly	VWV1190
	112	VDTB board assembly	VWS1094
	113	SCRT board assembly	VWV1196
	114	PC suport	VEC1508
	115	PCB holder	VNE1652
	116	PCB holder(C)	VNE1329

Note: 109 SW1 board assembly and 110 FG board assembly are supplied for service as the MAIN board assembly (VWM1163).

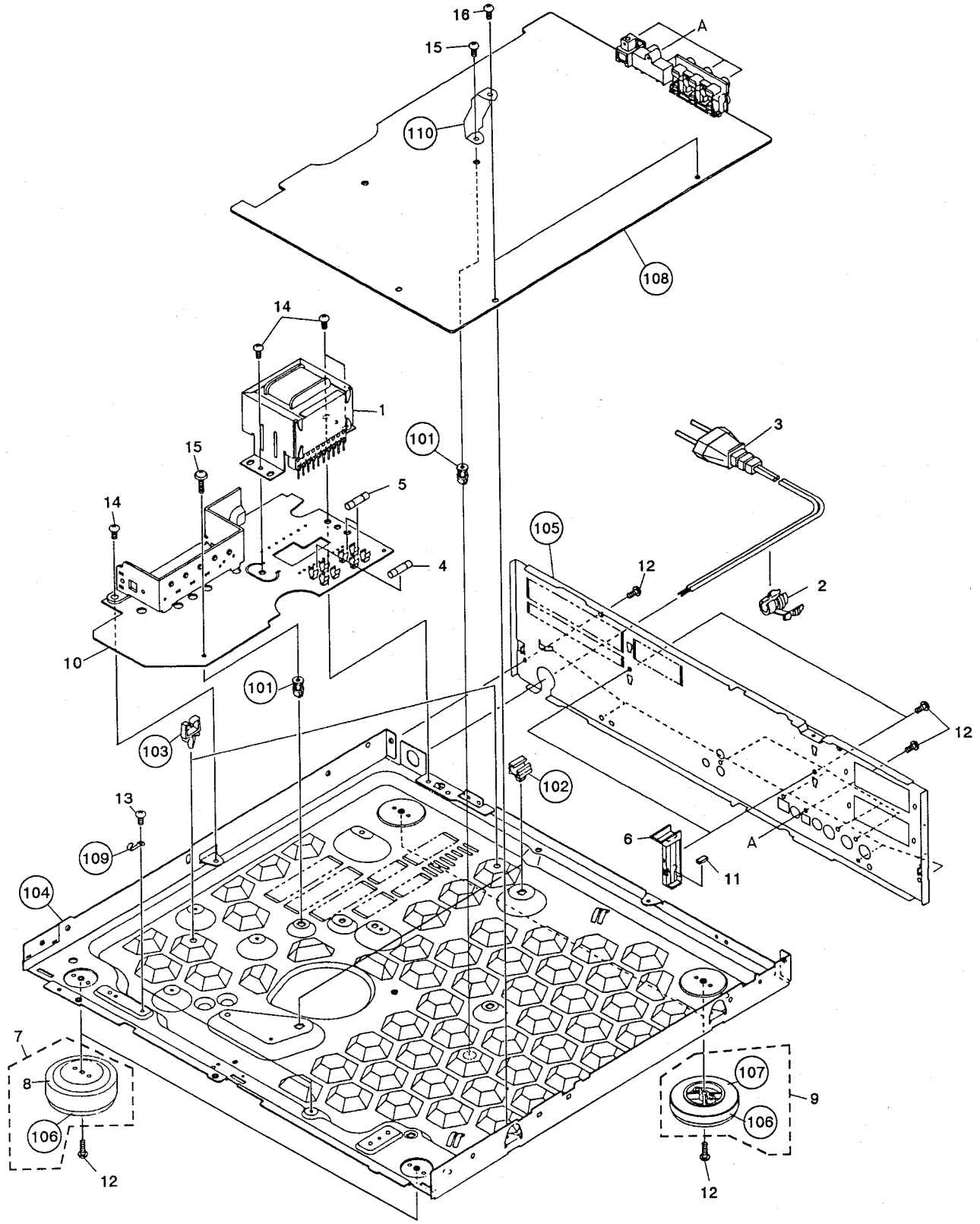
111 PALB board assembly, 112 VDTB board assembly and 113 SCRT board assembly are supplied for service as the VTPB board assembly (VWM1167).

3.5 BASE SECTION

Parts List

Mark	No.	Description	Part No.
⚠	1	Power transformer	VTT1062
⚠	2	Strain relief	CM-22B
⚠	3	AC power cord	VDG1028
⚠	4	Fuse (FU203,FU204) (T1.25A)	REK-101
⚠	5	Fuse (FU201,FU202) (T3.15A)	REK-105
	6	Tray stopper	VNL1202
	7	Insulator assembly	VXA1686
	8	Insulator	VNK1095
	9	Insulator assembly	VXA1687
◉	10	SYPS assembly	VWR1093
	11	Door dump rubber	VEB1033
	12	Screw	BBZ30P080FCC
	13	Screw	BBZ30P060FCC
	14	Screw	BCZ40P080FUC
	15	Screw	IPZ30P160FMC
	16	Screw	IBZ30P060FCC
	101	P. C. B spacer	PNY-404
	102	P plate holder	PNY-405
	103	Wire crip (B)	VEC1012
	104	Base chassis	VNA1121
	105	Rear panel	VNA1207
	106	Stopper	VEC1487
	107	Insulator	VNK1248
	108	ASCB board assembly	VWX1062
	109	Cord holder	VNF-069
	110	PCB holder(C)	VNE1329

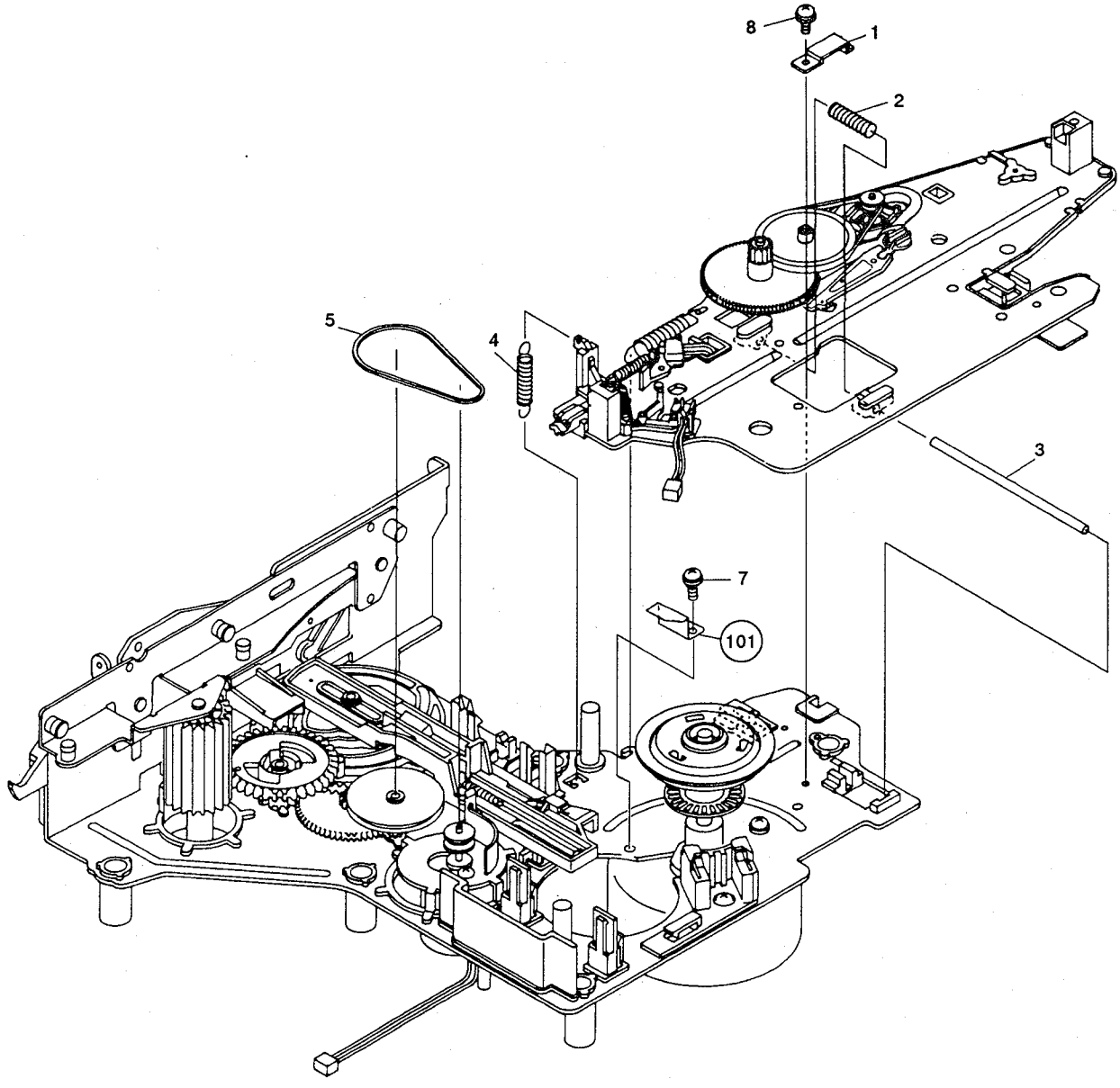
Note: 108 ASCB board assembly is supplied for service as the MAIN board assembly (VWM1163).


16
15
A
110
108
14
1
101
3
15
5
14
4
105
12
2
10
101
12
103
102
13
109
6
A
11
104
7
8
106
12
107
9
106
12

3.6 MECHANISM ASSEMBLY

Parts List

Mark	No.	Description	Part No.
	1	Plate spring	VBK1013
	2	Thrust spring	VBH1073
	3	Tilt shaft	VLL1175
	4	Tilt pulling spring	VBH1074
	5	Belt	PEB1013
	6	• • • • •	
	7	Screw	PMA30P050FMC
	8	Screw	ABZ26P050FMC
	101	Cam head stopper	VNE1331

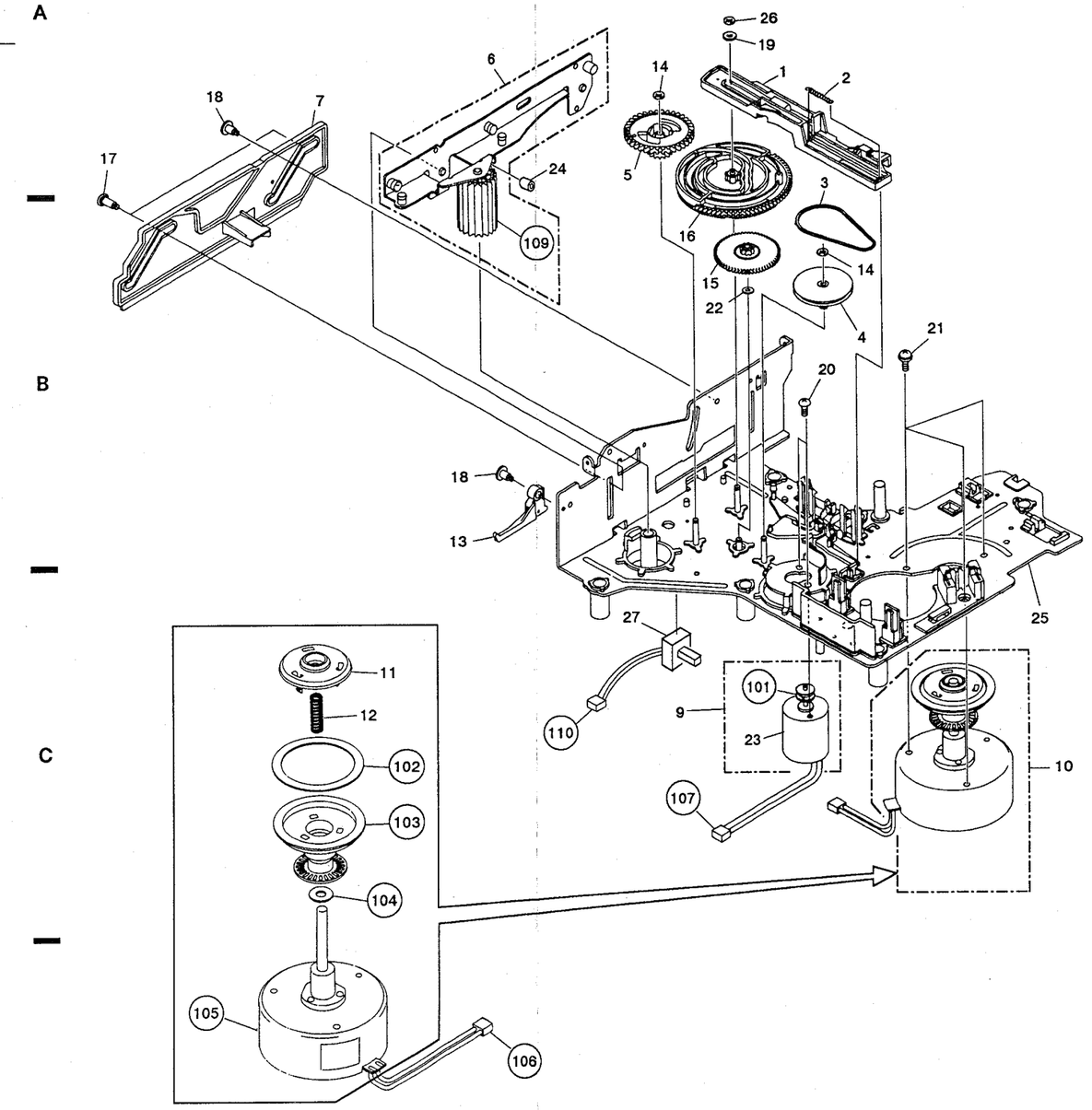


3.7 CHASSIS SECTION

Parts List

Mark	No.	Description	Part No.
	1	Spring slanting cam	VNL1191
	2	Cam spring	VBH1082
	3	Belt	PEB1013
	4	Gear pulley	VNL1249
	5	Follow gear	VNL1194
	6	Roller plate assembly	VXA1531
	7	Slide cam	VNL1188
	8	• • • • •	
	9	Loading motor assembly	VXX1262
	10	Spindle motor assembly	VXA1474
	11	Centering hab	VNL1174
	12	Centering spring	VBH1083
	13	Door lever	VNL1407
	14	Washer	WT26D047D025
	15	Two stair gear	VNL1193
	16	Cam gear	VNL1340
	17	Screw (C)	VBA1015
	18	Screw (B)	VBA1008
	19	Nylon washer	WA32N080W020
	20	Screw	PMZ30P040FMC
	21	Screw	PMA30P050FMC
	22	Washer	WA32D060D025
	23	Loading motor	VXM1034
	24	Stop ring	VEB1091
◉	25	Chassis assembly	VXA1575
	26	E ring	YE23FUC
	27	Push switch (S6:TRAY IN)	DSG1014

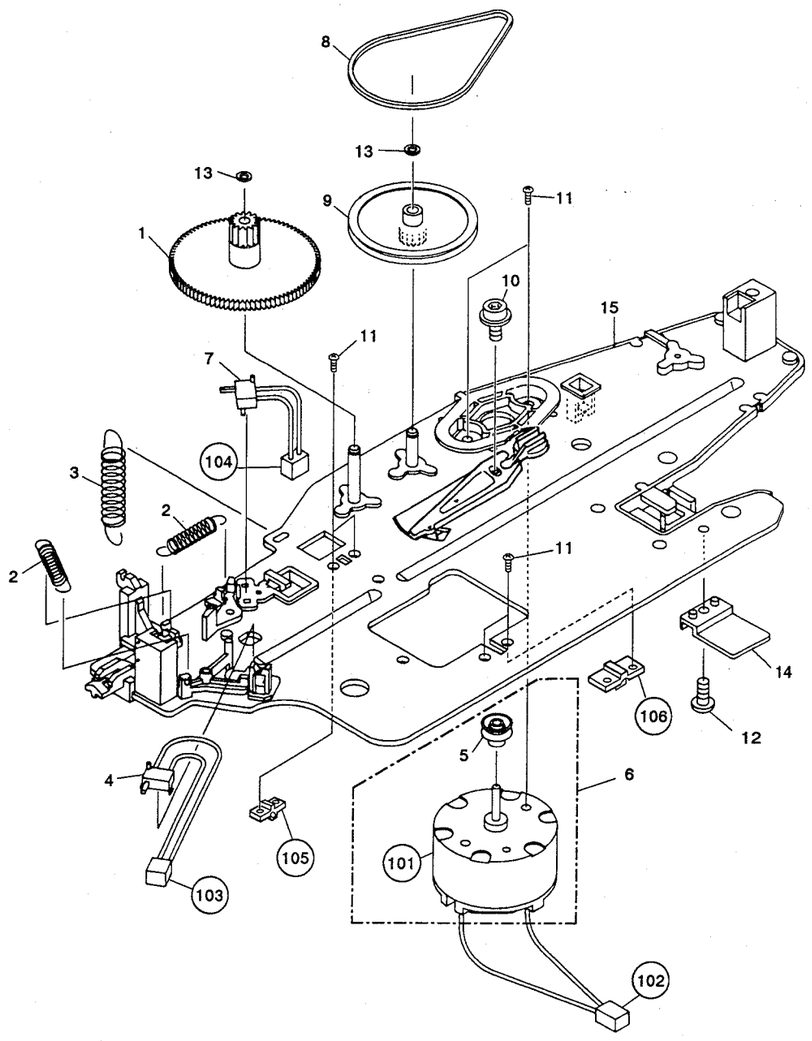
Mark	No.	Description	Part No.
	101	Motor pulley	VLL1176
	102	Rubber sheet	VEB1103
	103	Turn table assembly	VXA1283
	104	Oil stopped washer	VBF1002
	105	Spindle motor	VXM1032
	106	Housing assembly	VKP1566
	107	Housing assembly	VKP1862
	108	• • • • •	
	109	Slider gear	VNL1189
	110	Housing assembly	VKP1815



3.8 SERVO MECHANISM BASE SECTION

Parts List

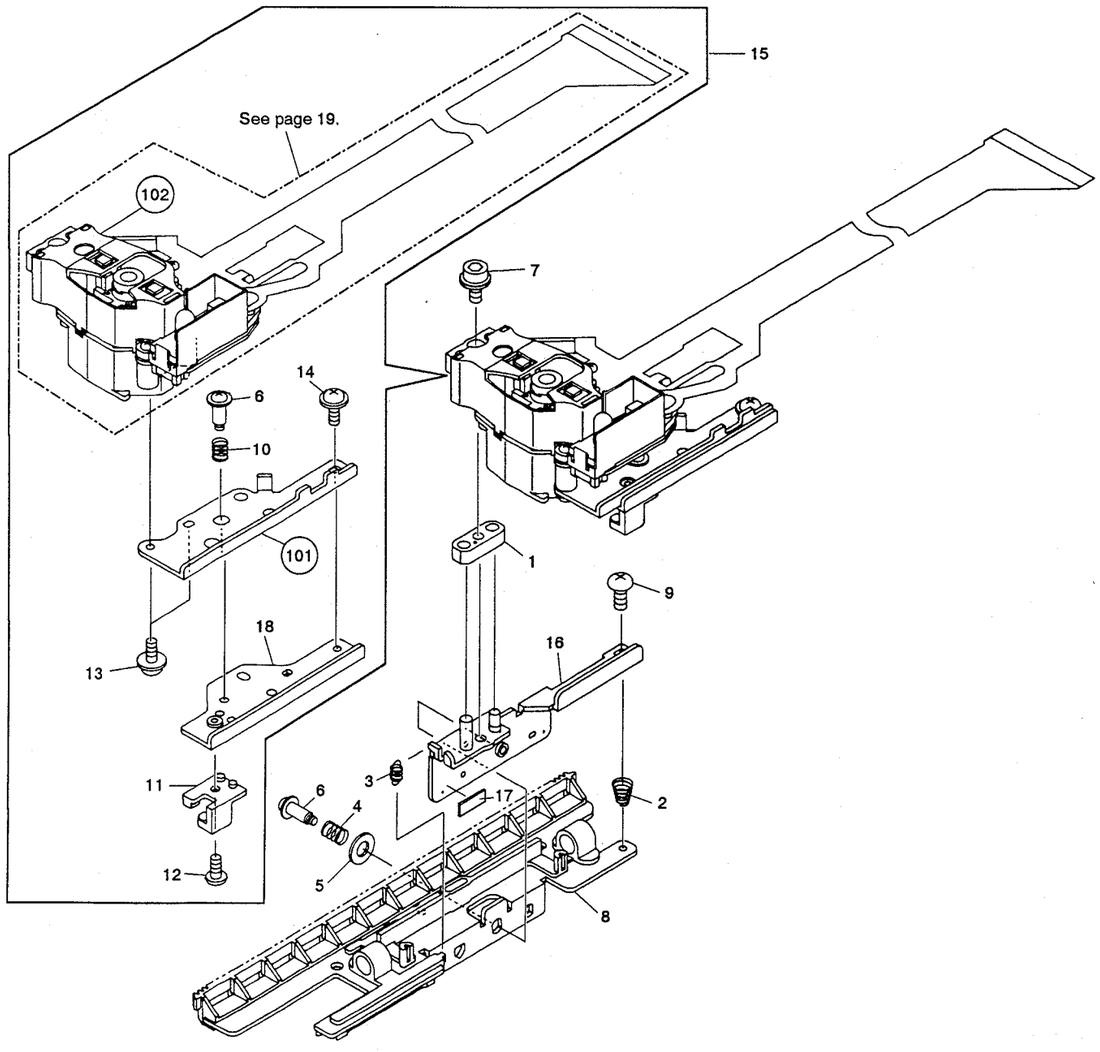
Mark	No.	Description	Part No.
	1	CA gear (3)	VNL1196
	2	Switch pulling spring	VBH1079
	3	TC pulling spring	VBH1181
	4	Push switch (S5:OUTER)	DSG1014
	5	CA pulley (1)	VNL1197
	6	Carriage motor assembly	VXX1261
	7	Push switch (S4:INNER)	DSG1014
	8	CA belt	VEB1077
	9	CA pulley (2)	VNL1198
	10	Screw	SMF30H080FBT
	11	Screw	PMZ26P040FMC
	12	Screw	BPZ26P050FMC
	13	Washer	WT26D047D025
	14	FLE base	VNL1341
◉	15	Servo mechanism base assembly-S	VXA1583
	101	Carriage motor	VXM1033
	102	Housing assembly	VKP1566
	103	Housing assembly	VKP1861
	104	Housing assembly	VKP1554
	105	Holder (A)	VNV1022
	106	Holder (B)	VNV1023



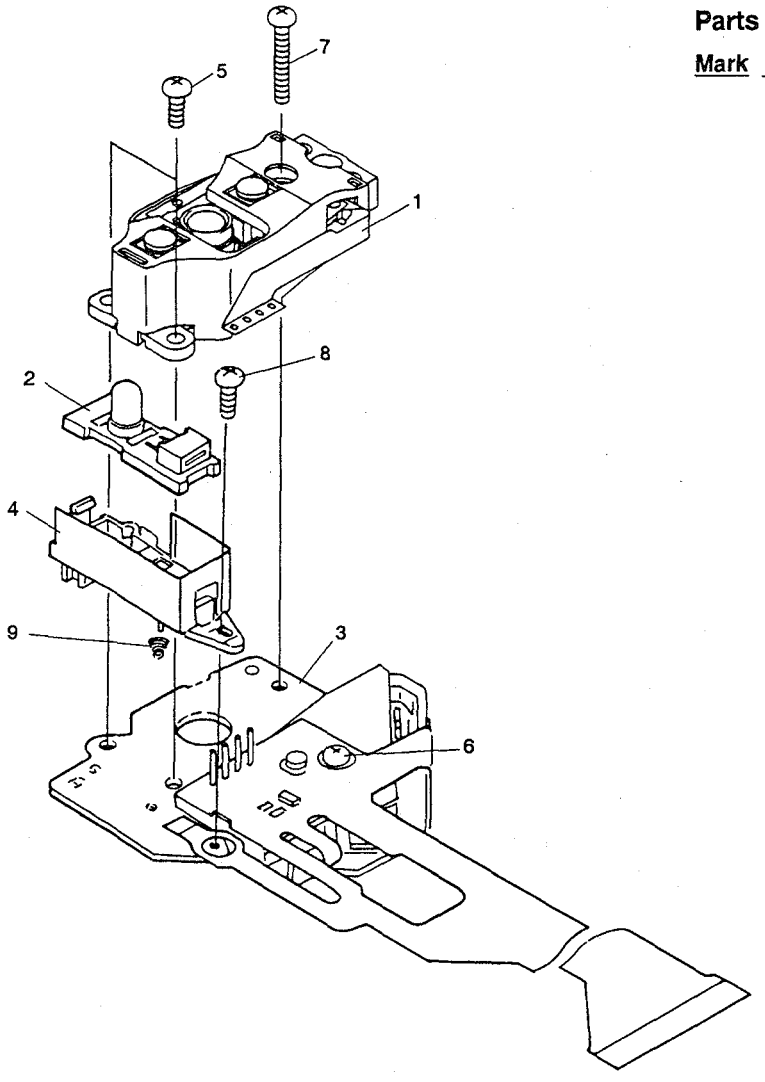
3.9 RACK SECTION

Parts List

Mark	No.	Description	Part No.
	1	PU base	VNL1209
	2	LP center spring	VBH1075
	3	PU pulling spring	VBH1089
	4	L-2 spring	VBH1090
	5	Washer	WC30FMC
	6	Screw	VBA1007
	7	Screw (2.6 × 10)	VLL1192
◉	8	Rack	VNL1186
	9	Screw	BMZ26P080FMC
	10	TAN spring	VBH1081
	11	TAN base	VNL1199
	12	Screw	PMZ20P040FMC
	13	Screw	PMA20P040FMC
	14	Screw	AMZ20P050FMC
	15	Slider assembly	VWT1060
	16	PU mount base assembly	VXA1567
	17	Spacer (S)	VEC1284
	18	TAN plate (1)	VNE1606
	101	TAN plate (2)	VNE1303
	102	Pickup assembly	VWY1021



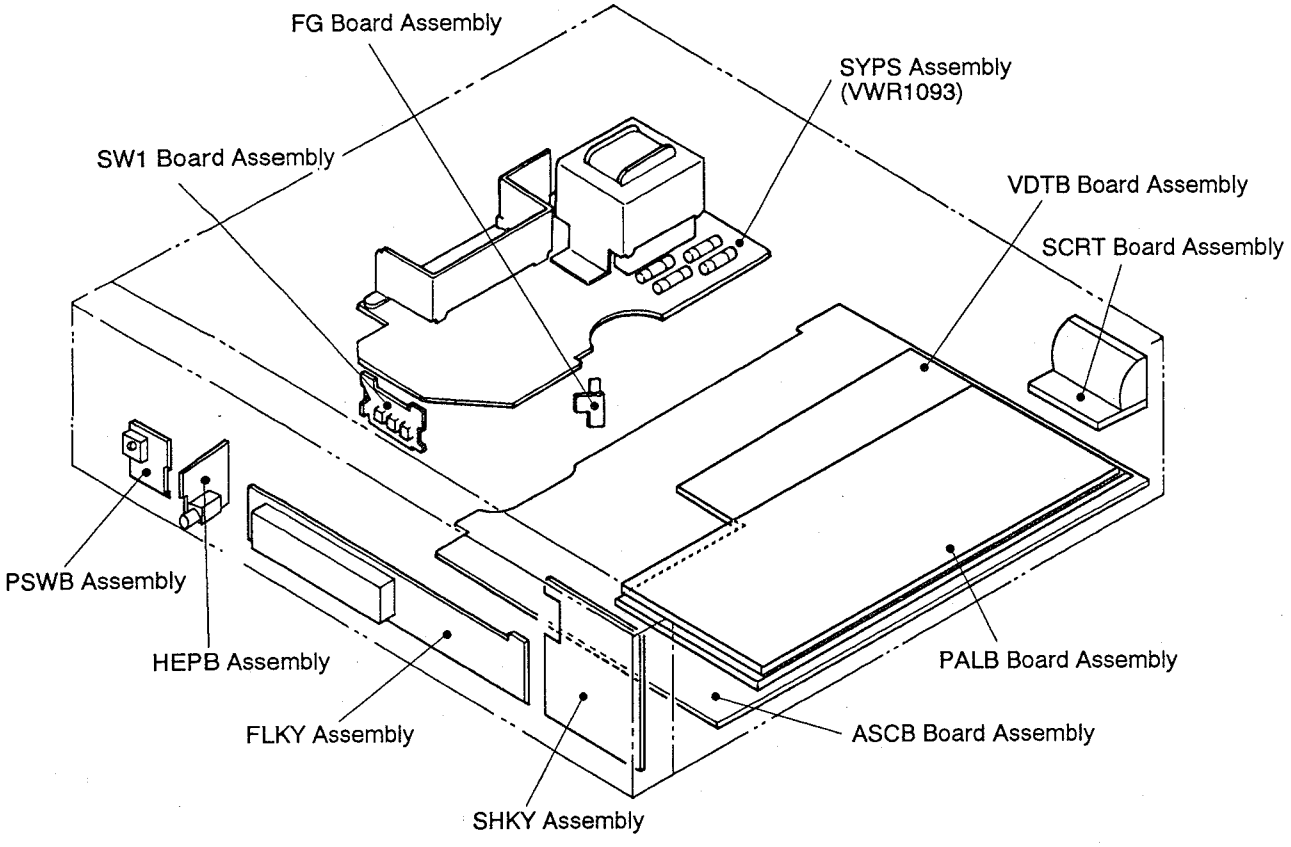
3.10 PICKUP ASSEMBLY



Parts List of Pickup assembly

Mark	No.	Description	Part No.
	1	Actuator assembly	VXX1551
	2	Sensor assembly	VEX1018
	3	Pre-pickup assembly	VXX1413
	4	Sensor stay	VNH1024
	5	Screw	PMA20P060FMC
	6	Screw	PMA20P080FMC
	7	Screw	PMA20P160FMC
	8	Screw	BMZ20P060FMC
	9	Sensor spring	VBH1087

4. P. C. BOARDS LOCATION



MAIN BOARD ASSEMBLY (VWM1163)

MAIN board assembly is composed of ASCB, FG and SW1 board assemblies.

VTPB BOARD ASSEMBLY (VWM1167)

VTPB board assembly is composed of VDTB, PALB and SCRT board assemblies.

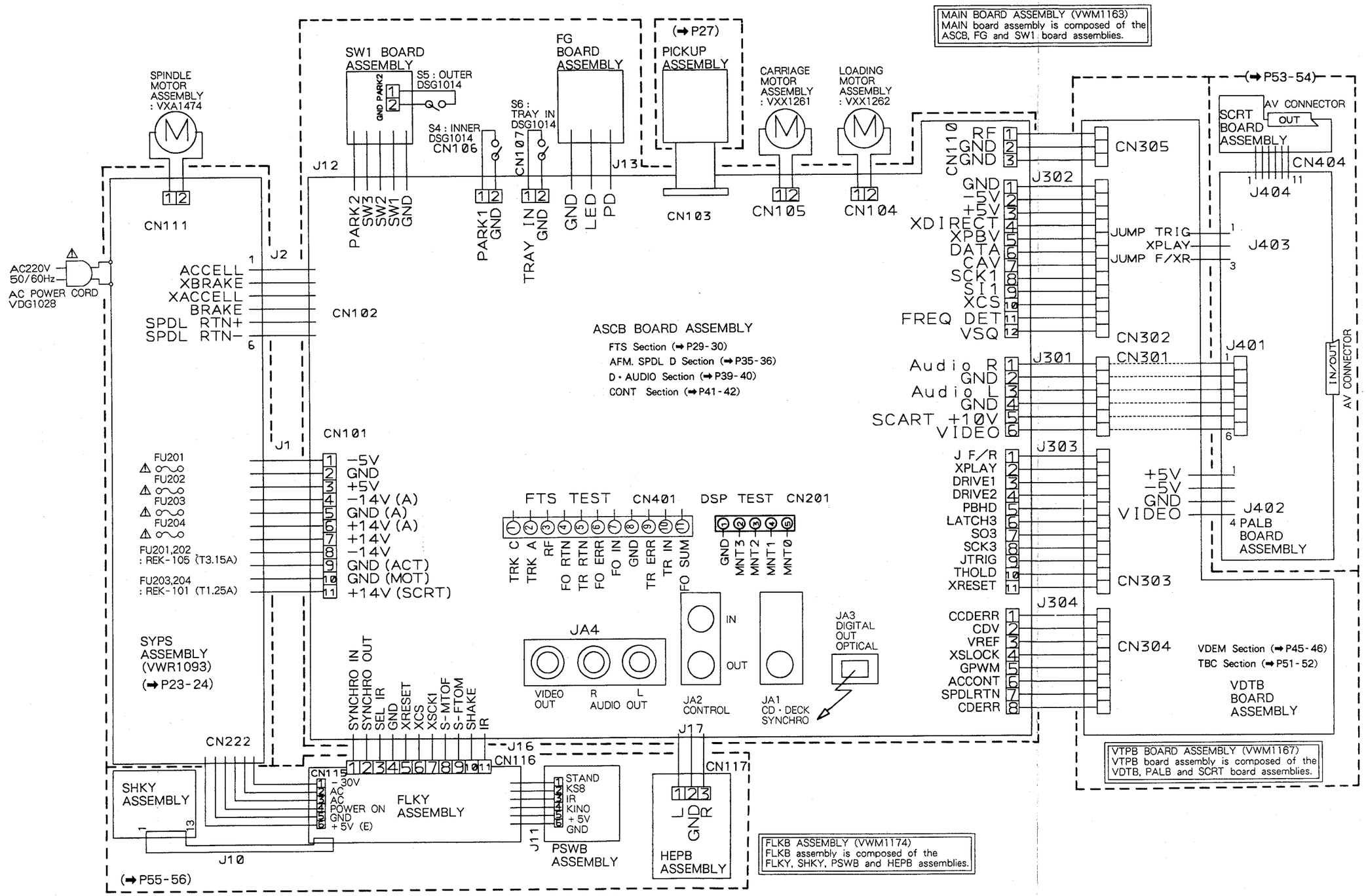
FLKB ASSEMBLY (VWM1174)

FLKB assembly is composed of FLKY, SHKY, PSWB and HEPB assemblies.

ASCB	: **A**UDIO **S**ERVO **C**ONTROL **B**OARD
FG	: **FG** COUNTER BOARD
SW1	: **SW1** BOARD
VDTB	: **V**IDEO AND **T**BC **B**OARD
PALB	: **PAL B**OARD
SCRT	: EUROPEAN **SCRT** BOARD
FLKY	: **FL** TUBE AND **K**EY BOARD
SHKY	: **SH**UTTLE AND **K**EY BOARD
PSWB	: **P**OWER **SW**ITCH **B**OARD
HEPB	: **HE**ADPHONE **B**OARD
SYPS	: **SY**STEM **P**OWER **S**UPPLY

5. SCHEMATIC AND P.C.BOARDS DIAGRAM

5.1 OVERALL WIRING DIAGRAM



5.2 SYPS ASSEMBLY

SYPS ASSEMBLY (VWR1093)

Q201, Q204, Q206 : 2SD1762
Q202, Q203, Q205 : 2SB1185
Q207 : 2SB1238X
Q214, Q219 : 2SA933S
Q213 : DTC114ES
Q218 : 2SC1740S
Q217 : DTA114ES

D101, 103 MTZJ5.6B
D102, 104 MTZJ5.1C
D201, D202 : S2VB20
D208, D209,
D216, D217 : 1SS252
D213, D214,
D222, D223 : 1SR35-100AVL
D212, D215 : 10ELS2
D220 : MTZJ22C

IC201,202 : ICP-N15
IC205 : NJM78M05FA
IC206 : ICP-N25

R231 : VCN1029

L201 : VTL1008
L202 : VTL-157

Q207 : -30V REGULATOR

——— : SPDL Servo Loop Line

IC205 : EVER +5V REGULATOR

AC220V 50/60Hz
AC POWER CORD VDG1028
VCG-048
POWER TRANSFORMER VTT1062
FU201,202 : REK-105
FU203,204 : REK-101

TO ASCB BOARD ASSEMBLY CN102 (➡P35)
ACCEL
X-BRAKE
X-ACCEL
BRAKE
SPDL RTN+
SPDL RTN−

Q203-206 : SPDL MOTOR DRIVE

SPINDLE MOTOR ASSEMBLY VXA1474

CN222
EVER +5V
GND
POWER ON
AC
AC
−30V
TO FLKY ASSEMBLY CN115 (➡P55)

J1
+14V (SCART)
FTS GND
FTS GND
FTS −14V
FTS +14V
AUDIO +14V
AUDIO GND
AUDIO −14V
+5V
GND
−5V
TO ASCB BOARD ASSEMBLY CN101 (➡P29)

IC201,202,206 : PROTECTOR

Q219 : POWER ON SW

Q202,213,214 : +5V REGULATOR

Q201,217,218 : −5V REGULATOR

1. RESISTORS:
Indicated in Ω , 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted kΩ , M:MΩ , (F): ± 1%, (G): ± 2%,(K): ± 10%, (M): ± 20% tolerance.

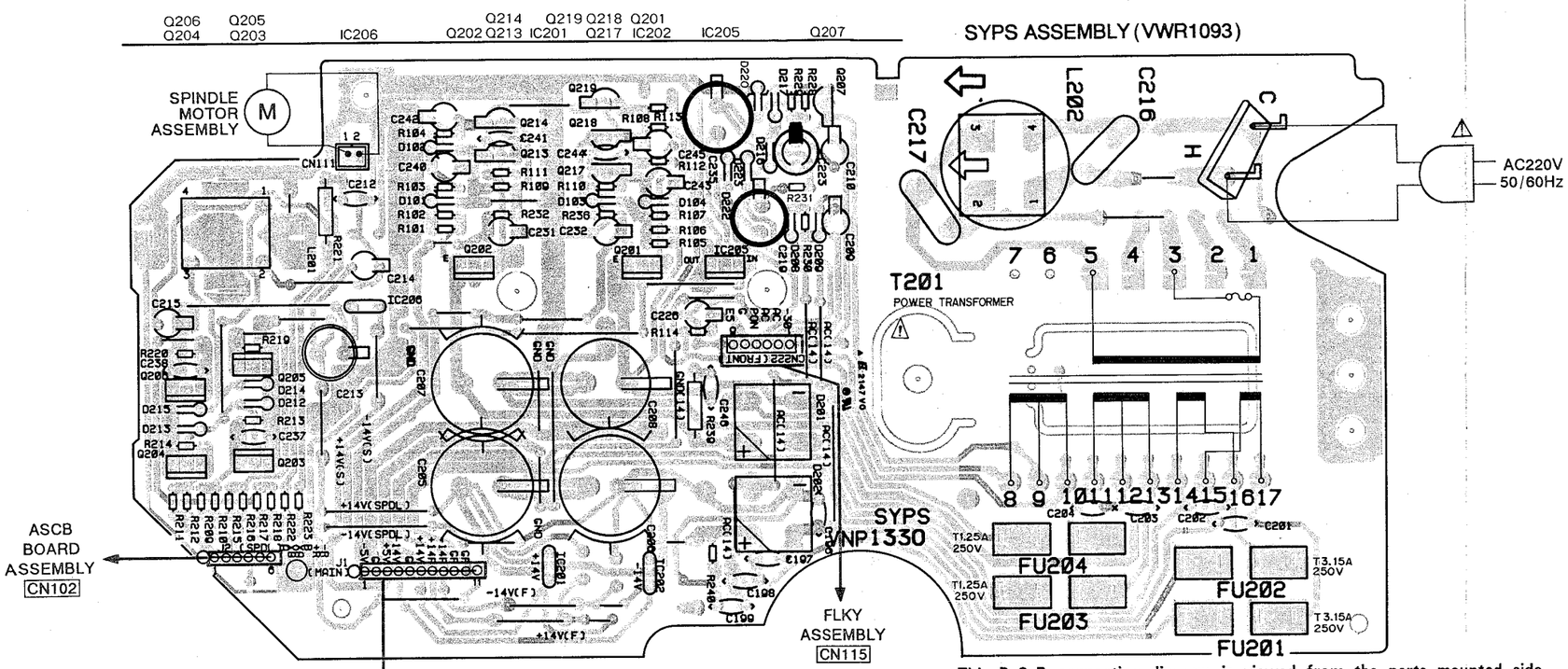
2. CAPACITORS:
Indicated in capacity (μF) /voltage(V)unless otherwise noted p:pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
▭ ;DC voltage (V) at no input signal.
Value in ( ) is DC voltage at rated power.
⇦mA ;DC current at no input signal.

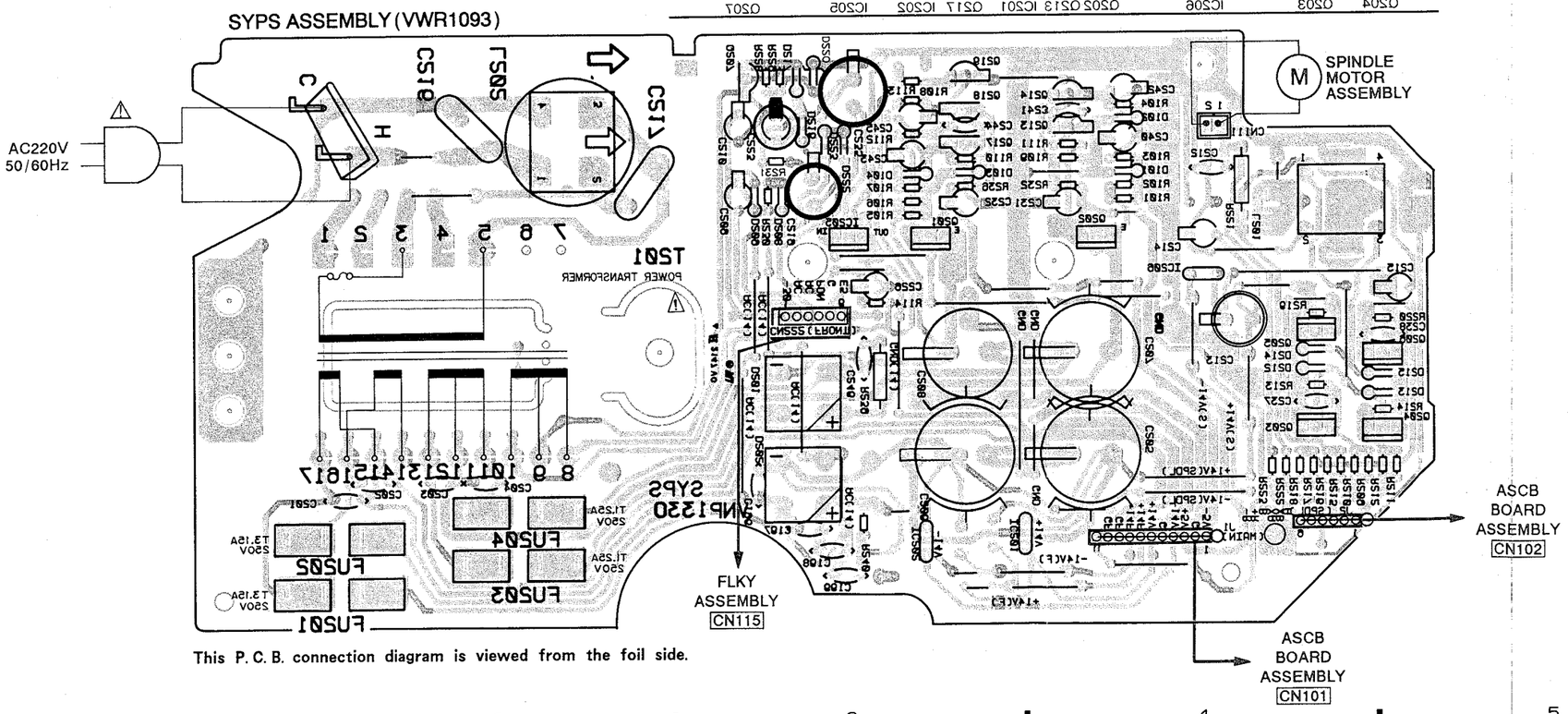
4. OTHERS:
➡ ;Signal route.
⊘ ;Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES :(The underlined indicates the switch position)
OUTSIDE OF P.C. BOARDS
S4 :INNER
S5 :OUTER
S6 :TRAY IN
SW1 ASSEMBLY
S1-S3 :LOADING/TILT
FLKY ASSEMBLY
S10 :PGM
S11 :5
S12 :0
S13 :+10
S14 :2
S15 :1
S16 :4
S17 :3
S18 :9
S19 :8
S20 :7
S21 :6
(S11-S21 : DIRECT SEARCH)
S22 :DIRECT CD
S23 :SINGLE
S24 :DOOR
SHKY ASSEMBLY
S40 :DIGITAL LEVEL CTRL
S41 :PGM EDIT
S42 :LANGUAGE
S43 :RANDOM PLAY
S44 :HILITE/INTRO SCAN
S45 :|◀◀ (SKIP)
S46 :▶▶| (SKIP)
S47 :OPEN/CLOSE (▲)
S48 :STOP (■)
S49 :PLAY/PAUSE (▶/II)
S51 :SCAN/LEVEL (◀◀/▶▶)
PSWB ASSEMBLY
S60 :POWER



This P. C. B. connection diagram is viewed from the parts mounted side.

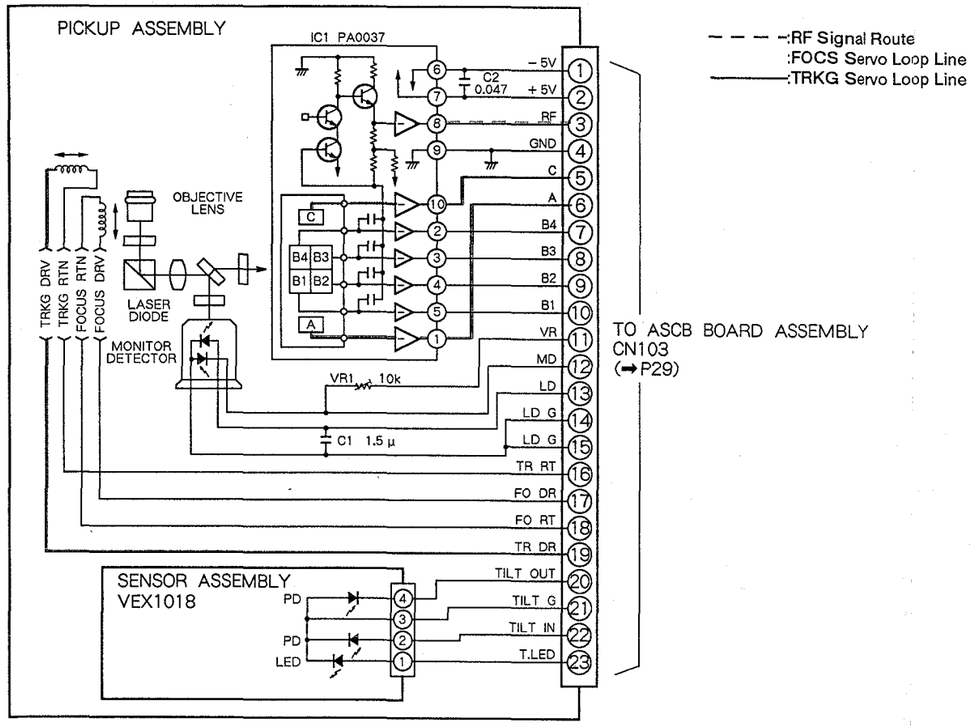


This P. C. B. connection diagram is viewed from the foil side.

P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

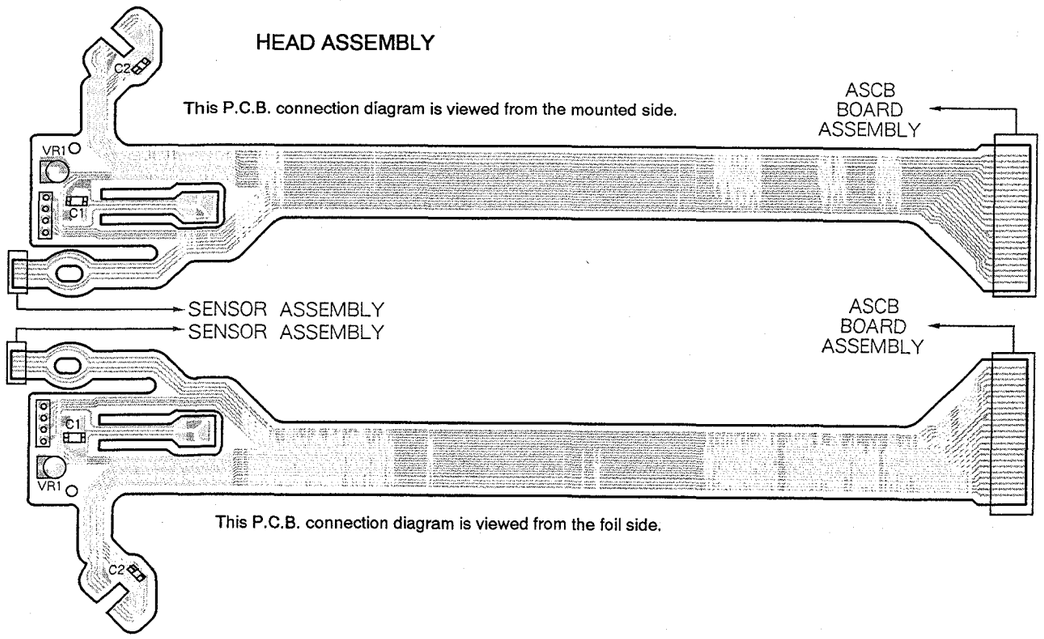
1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

5.3 PICKUP ASSEMBLY



HEAD ASSEMBLY

This P.C.B. connection diagram is viewed from the mounted side.



This P.C.B. connection diagram is viewed from the foil side.

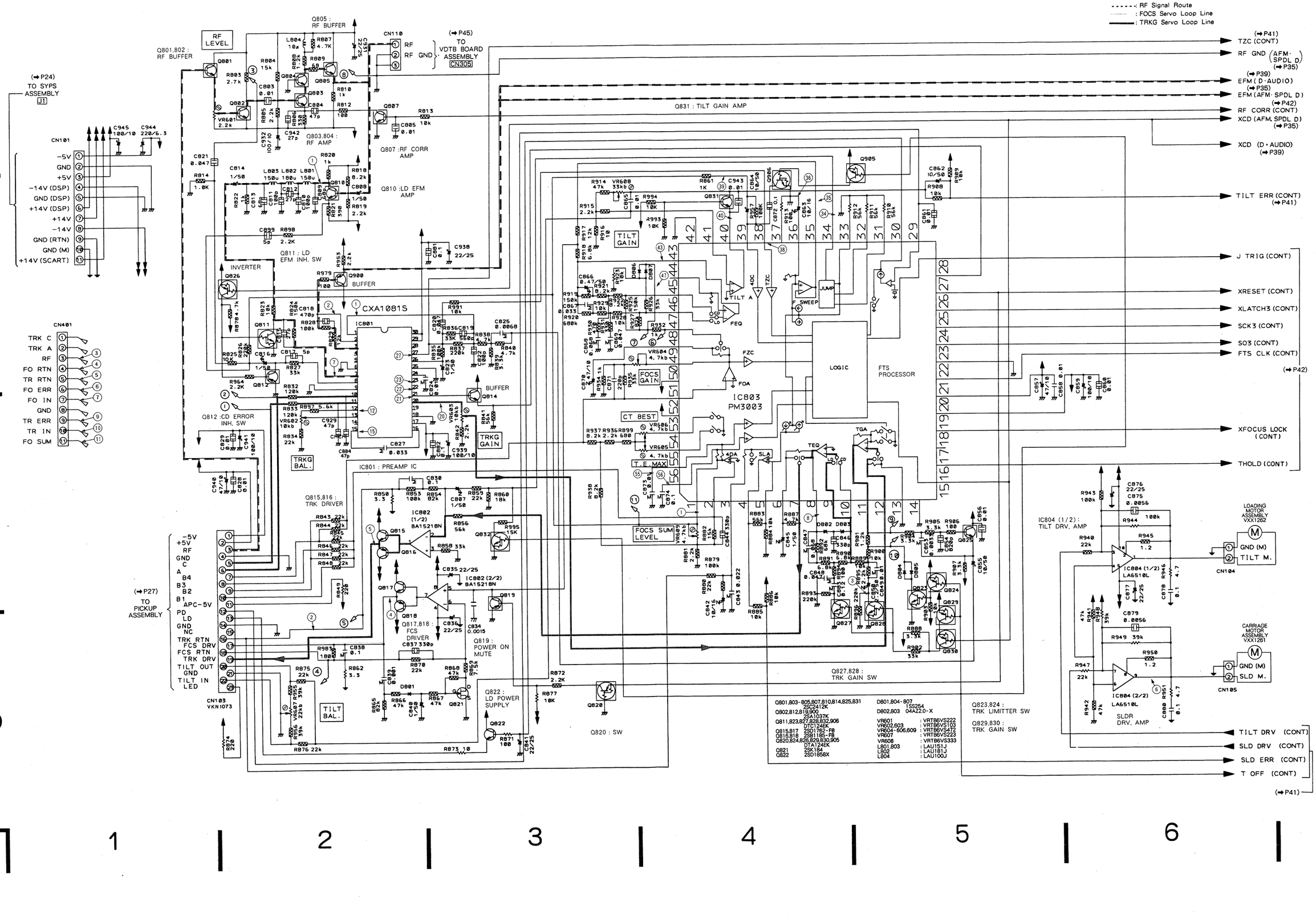
FTS SECTION

Note: (No.) in the table correspond to the pin No.

IC801 (CXA1081S)		CN401	IC803 (PM3003)		Other points
① 1.5Vp-p	⑳ 400mVp-p	③ 300mVp-p	① 300mVp-p	㊴ 1Vp-p	① Q810 Collector 400mVp-p
② 1.5Vp-p	㉑ 700mVp-p	④ 5Vp-p	⑧ 2Vp-p	㊵ 200mVp-p	② CN103 Pin 2 200mVp-p
⑦ 40mVp-p	㉒ 10Vp-p :still	⑤ 4Vp-p	㉞ 500mVp-p :still	㊸ 1.5Vp-p	㉞ Q828 Collector 400mVp-p
⑫ 200mVp-p	㉓ 2Vp-p	⑥ 600mVp-p	㉟ 1Vp-p	㊼ 150mVp-p	④ CN103 Pin 17 15Vp-p
⑮ 400mVp-p	㉗ 3Vp-p	⑦ 1.5Vp-p	㊱ 2Vp-p	㊺ 250mVp-p	⑤ CN103 Pin 19 20Vp-p
⑧ 100mVp-p			㊳ 2Vp-p	㊻ 250mVp-p	⑥ IC804 Pin 9 3Vp-p
⑨ 1.25Vp-p :open					
⑩ 1.25Vp-p					
⑪ 500mVp-p					

5.4 ASCB BOARD ASSEMBLY (FTS SECTION)

ASCB BOARD ASSEMBLY (FTS SECTION)



7 8 9 10 11 12

A B C D

FLKY ASSEMBLY CN116

CN106 S4: INNER

CN107 S6: TRAY IN

SYPS ASSEMBLY J2

FG BOARD ASSEMBLY

CN112 S5: OUTER

SW1 BOARD ASSEMBLY

ASCB BOARD ASSEMBLY

PICKUP ASSEMBLY

VNZ1199-D

VWX -A

LOADING MOTOR ASSEMBLY CN104

CARRIAGE MOTOR ASSEMBLY CN105

OUT CONTROL IN

CD-DECK SYNCHRO

DIGITAL OUT OPTICAL

AUDIO OUT

VIDEO OUT

PHONES

HEPB ASSEMBLY

VDTB BOARD ASSEMBLY CN305

VDTB BOARD ASSEMBLY CN304

VDTB BOARD ASSEMBLY CN303

SYPS ASSEMBLY J1

VDTB BOARD ASSEMBLY CN302

VDTB BOARD ASSEMBLY CN301

ASCB VNP1301-D

SAVE THE EARTH

(→P41) TZC (CONT)

RF GND (AFM·SPDL D) (→P35)

(→P39) EFM (D·AUDIO) (→P35)

EFM (AFM·SPDL D) (→P42)

RF CORR (CONT)

XCD (AFM, SPDL D) (→P35)

XCD (D·AUDIO) (→P39)

TILT ERR (CONT) (→P41)

J TRIG (CONT)

XRESET (CONT)

XLATCH3 (CONT)

SCK3 (CONT)

SO3 (CONT)

FTS CLK (CONT) (→P42)

XFOCUS LOCK (CONT)

THOLD (CONT)

LOADING MOTOR ASSEMBLY VXX1262 — GND (M) TILT M.

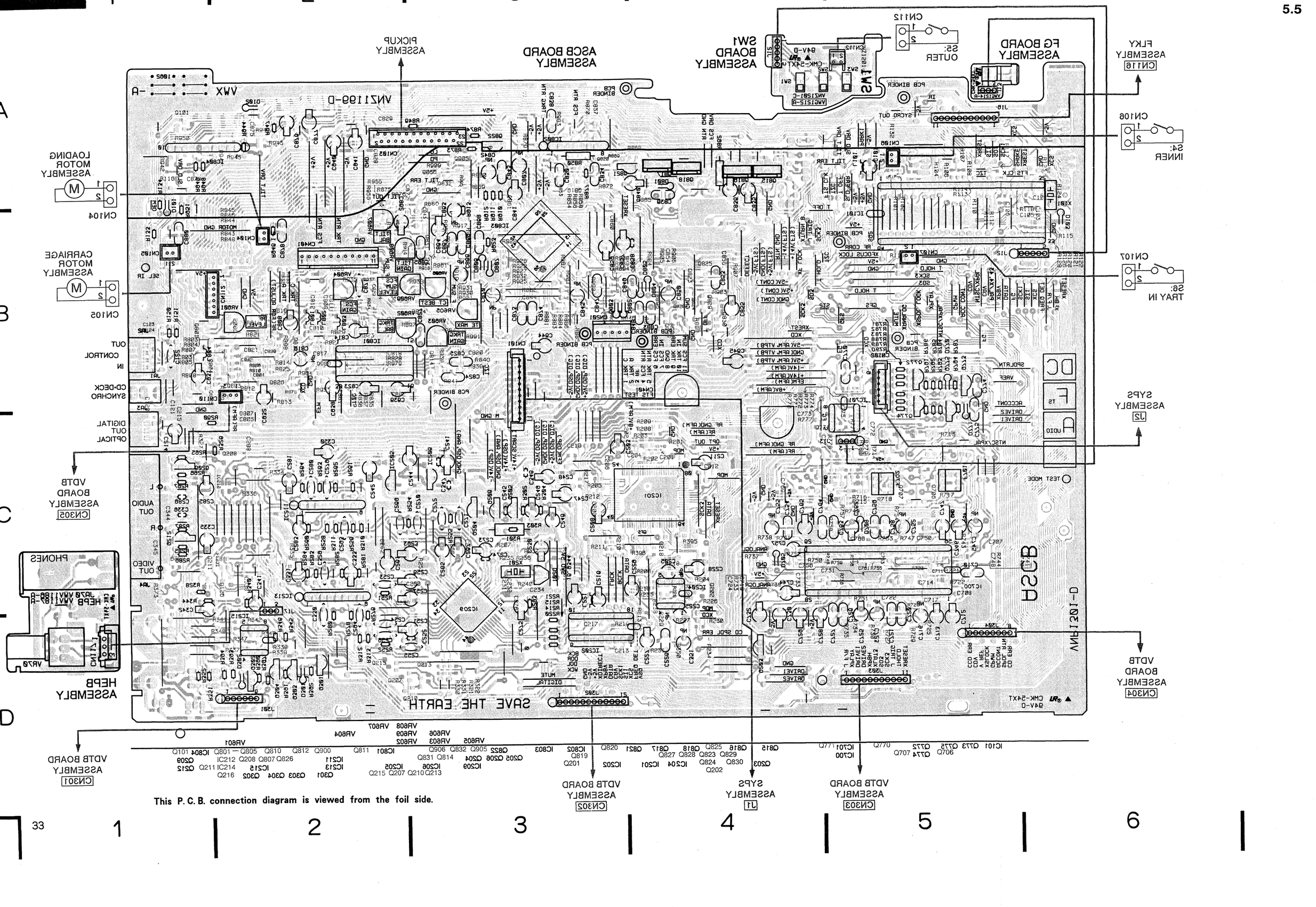
CARRIAGE MOTOR ASSEMBLY VXX1261 — GND (M) SLD M.

TILT DRV (CONT)

SLD DRV (CONT)

SLD ERR (CONT)

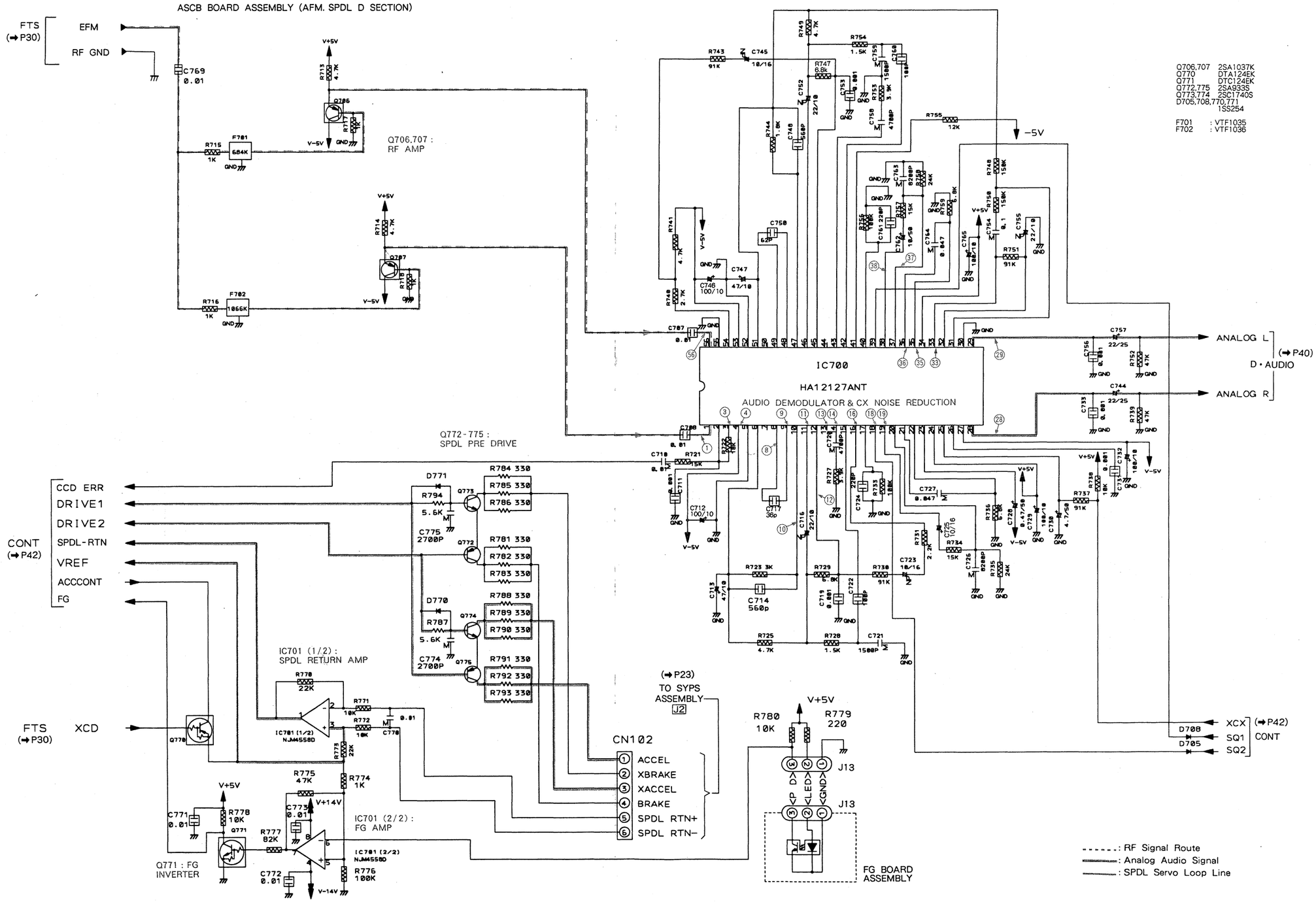
T OFF (CONT) (→P41)



This P. C. B. connection diagram is viewed from the foil side.

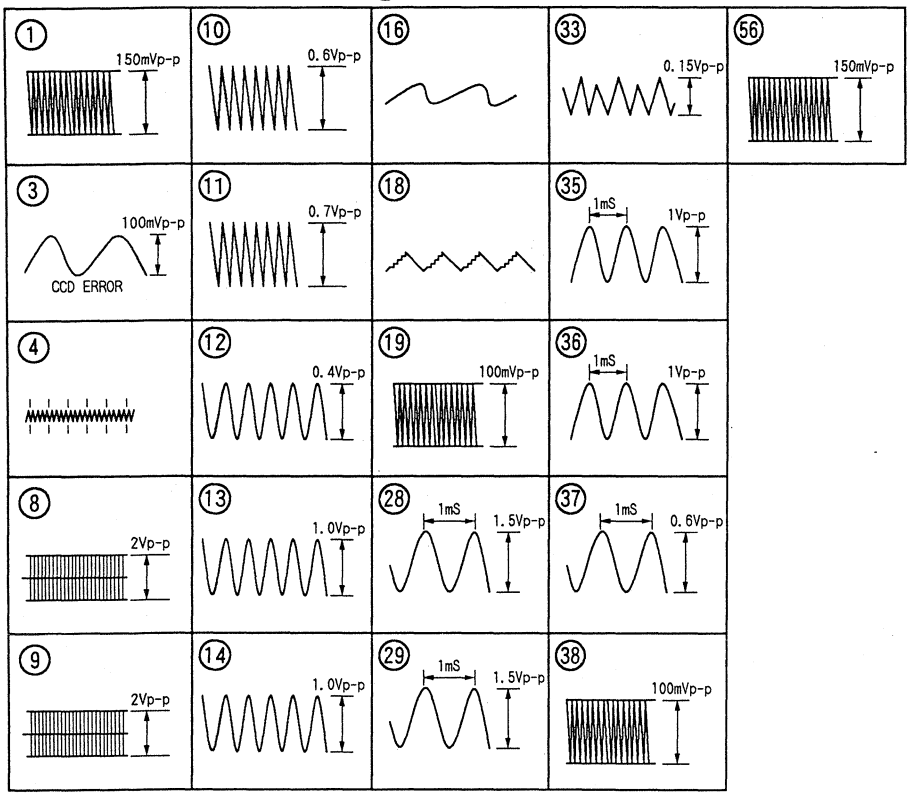
5.5 ASCB (AFM. SPDL D SECTION) AND FG BOARD ASSEMBLIES

ASCB BOARD ASSEMBLY (AFM. SPDL D SECTION)



AFM. SPDL D SECTION

- IC700 (HA12127ANT) Note : (No.) in the table correspond to the pin No.



D. AUDIO SECTION

Note: Waveforms and voltages are at the PLAY.

IC201 (CXD2500AQ)

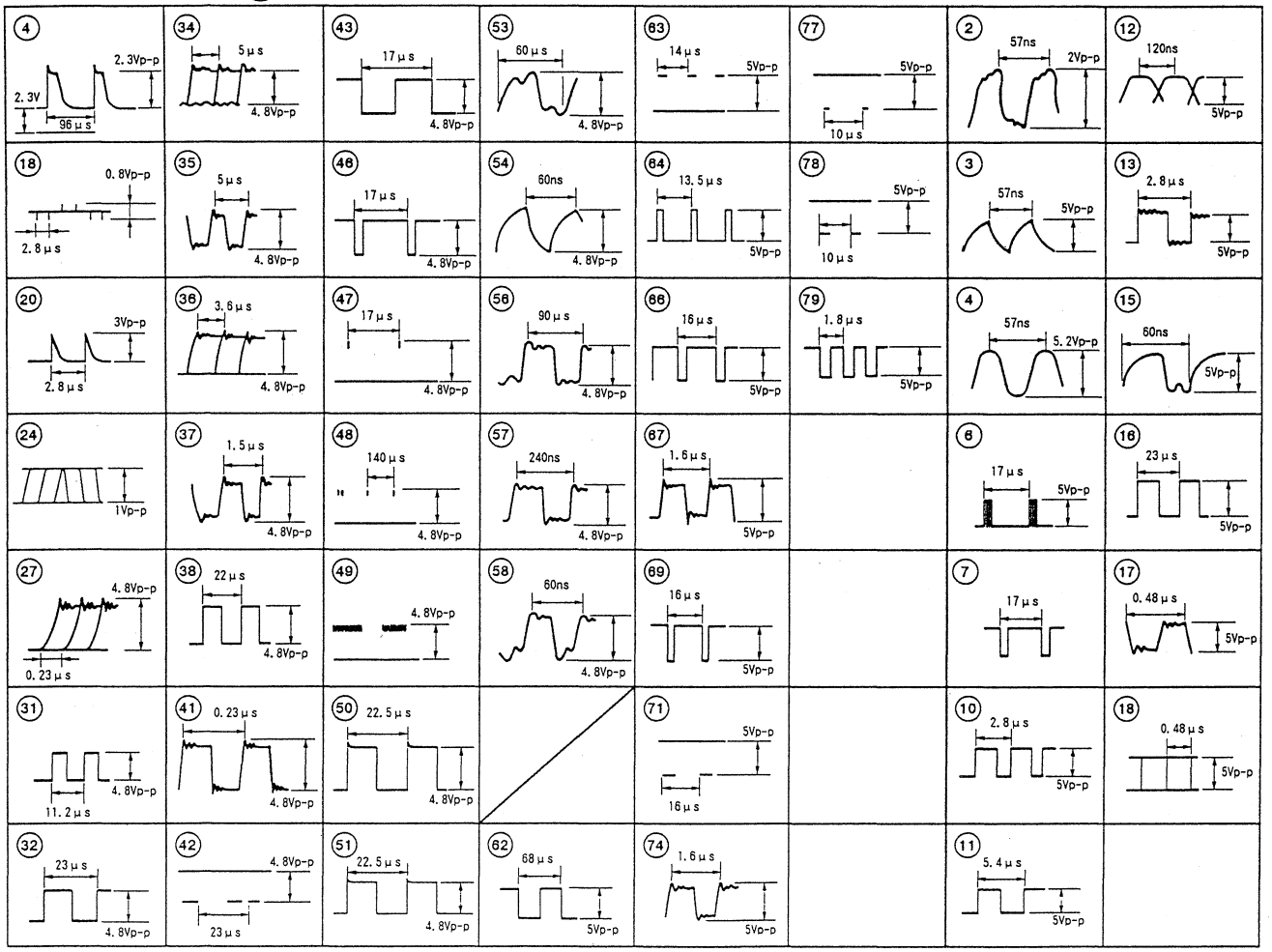
Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	0	15	0	29	0	43	*	57	*	71	*
2	0	16	4.8	30	0	44	0	58	*	72	5
3	0	17	0	31	*	45	4.8	59	5	73	5
4	*	18	*	32	*	46	*	60	*	74	*
5	0	19	2.4	33	4.8	47	*	61	5	75	0
6	4.8	20	*	34	*	48	*	62	*	76	0
7	0	21	0	35	*	49	*	63	*	77	*
8	4.8	22	2.3	36	*	50	*	64	*	78	*
9	0	23	4.8	37	*	51	*	65	0	79	*
10	0	24	*	38	*	52	0	66	*	80	0
11	0	25	0	39	0	53	*	67	*		
12	0	26	0	40	4.8	54	*	68	0		
13	0	27	*	41	*	55	0	69	*		
14	0	28	0	42	*	56	*	70	5		

*: Refer to waveforms

IC202 (SM5840AP)

Pin No.	Voltage	Pin No.	Voltage
1	5	10	*
2	*	11	*
3	*	12	*
4	*	13	*
5	0	14	5
6	*	15	*
7	*	16	*
8	5	17	*
9	5	18	*

IC201 (CXD2500AQ) Note: (No.) in the table correspond to the pin No. IC202 (SM5840AP)



5.6 ASCB BOARD ASSEMBLY (D. AUDIO SECTION)

ASCB BOARD ASSEMBLY (D. AUDIO SECTION)

: Video Signal Line
: RF Signal Route
: Analog Audio Signal Line
: Digtal Audio Signal Line

(➡P41-42) CONT

IC201 CXD2500AQ EFM DEMODULATION

IC202 SM5840AP DIGITAL FILTER

JA3 QP1F32T DIGITAL OUT OPTICAL

Q207 : MUTE INVERTER

MUTE (CONT) (➡P41)

Q213 : INVERTER

Q210 MUTE INVERTER

IC211 : L CH L.P.F. AMP

NJM5532SD

VKB1038 JA4 (1/3)

D/A CONVERTER IC289 SAA7350

Q208 : POWER ON MUTE INVERTER

IC212 : L CH DIG./ANA. SW

Q209 : MUTE SW

AUDIO OUT

IC213 : R CH L.P.F. AMP

NJM5532SD

VKB1038 JA4 (2/3)

A.L.

XANA (CONT) (➡P41)

ATC BUFFER IC204 (2/2) M5218AP

(➡P30) (FTS)

EFM

XCD

PLL ERROR AMP IC204 (1/2) M5218AP

Q204-206 : +5V (DAC) REGULATOR

Q201,202 : PLL ERROR SW

CD SPDL ERR (CONT) (➡P42)

IC214 : R CH DIG./ANA. SW

Q212 : MUTE SW

Q211 : POWER ON MUTE INVERTER

VKB1038 JA4 (3/3) VIDEO OUT

IC205 : +8V REGULATOR

NJM78L08A IC285

NJM79L08A IC286

IC206 : −8V REGULATOR

(➡P56) TO HEPB ASSEMBLY CN117

(➡P41) VREF (TO CONT)

M5218AP IC215 (2/2)

IC215 : HEADPHONE AMP

Q216 : INVERTER

SW Q215

J301
1 Audio-R
2 GND
3 Audio-L
4 GND
5 SCART+10V
6 VIDEO

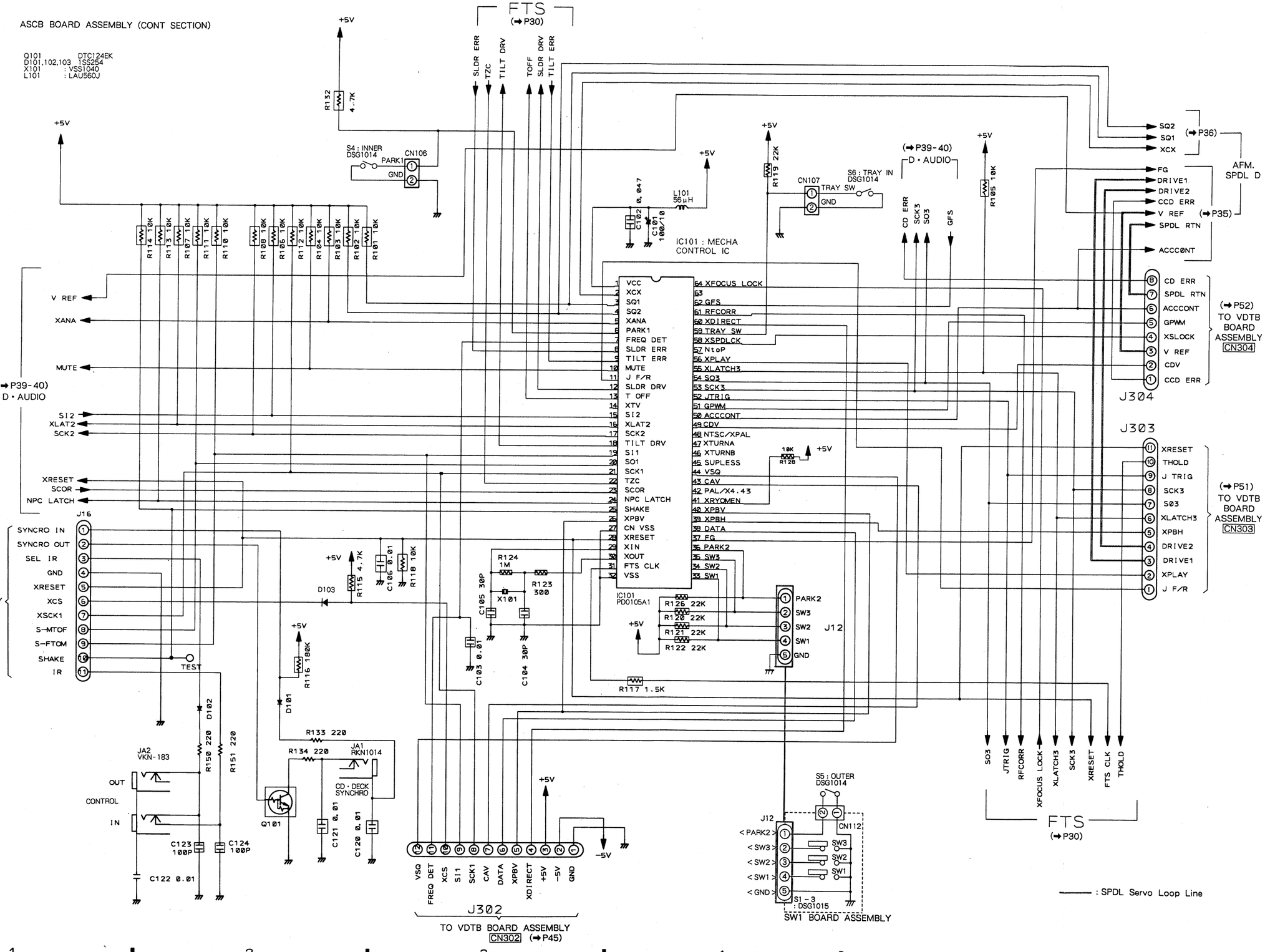
A.R. (AFM. SPDL D) (➡P36)

TO VDTB BOARD ASSEMBLY CN301 (➡P46)

Q201	2SC2412K
Q202,213,216	DTA124EK
Q203	2SC1740S
Q204	2SB1237X
Q205,302	2SA933S
Q206,301	DTC124ES
Q207,210	2SA1037K
Q208,211,215	DTC124EK
Q209,212	2SD2144S

R290 : DCN1002
L221 : LAU680J

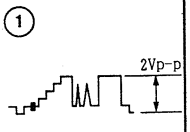
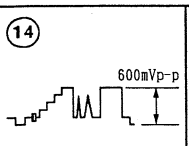
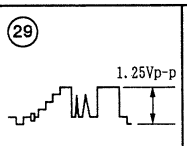
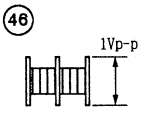
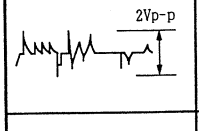
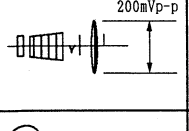
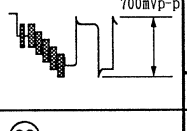
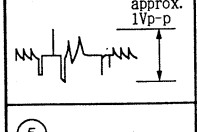
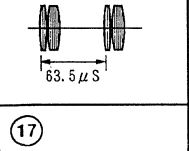
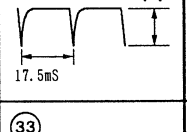
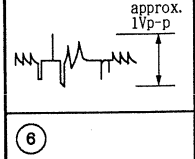
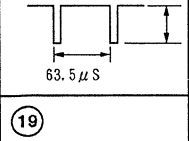
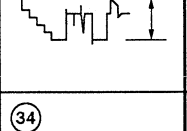
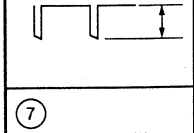
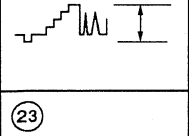
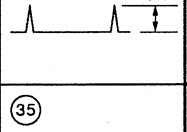
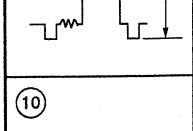
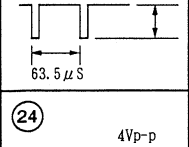
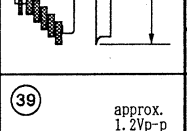
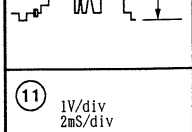
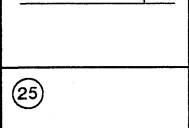
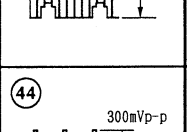
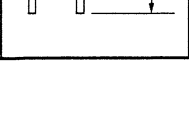
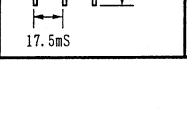
5.7 ASCB (CONT SECTION) AND SW1 BOARD ASSEMBLIES



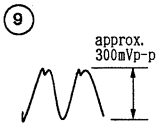
VDEM SECTION

Note: (No.) in the table correspond to the pin No.

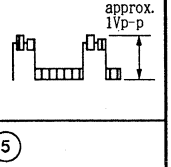
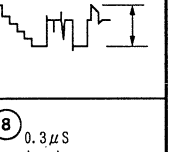
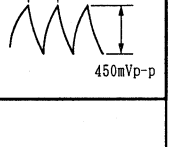
IC401 (PA5013A)

① 	⑭ 	㉙ 	㊻ 
③ 	⑮ 	㉛ 	
④ 	⑯ 	㉜ 	
⑤ 	⑰ 	㉝ 	
⑥ 	⑲ 	㉞ 	
⑦ 	㉓ 	㉟ 	
⑩ 	㉔ 	㊴ 	
⑪	㉕ 	㊹ 	

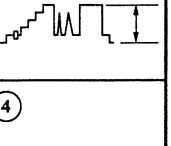
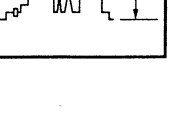
IC404 (PA0017)

⑨ 

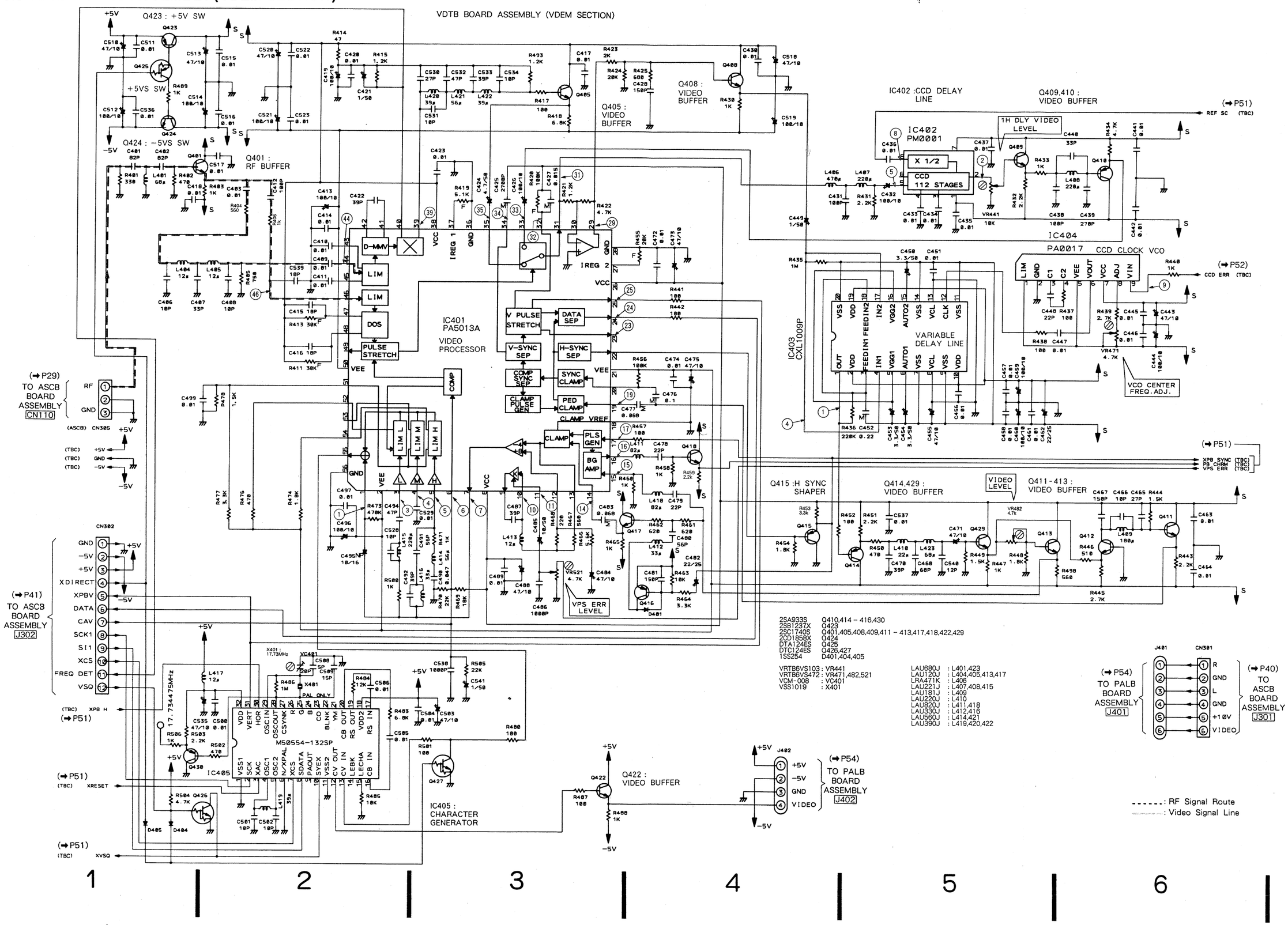
IC402 (PM0001)

② 
⑤ 
⑧ 

IC403(CXL1009P)

① 
④ 

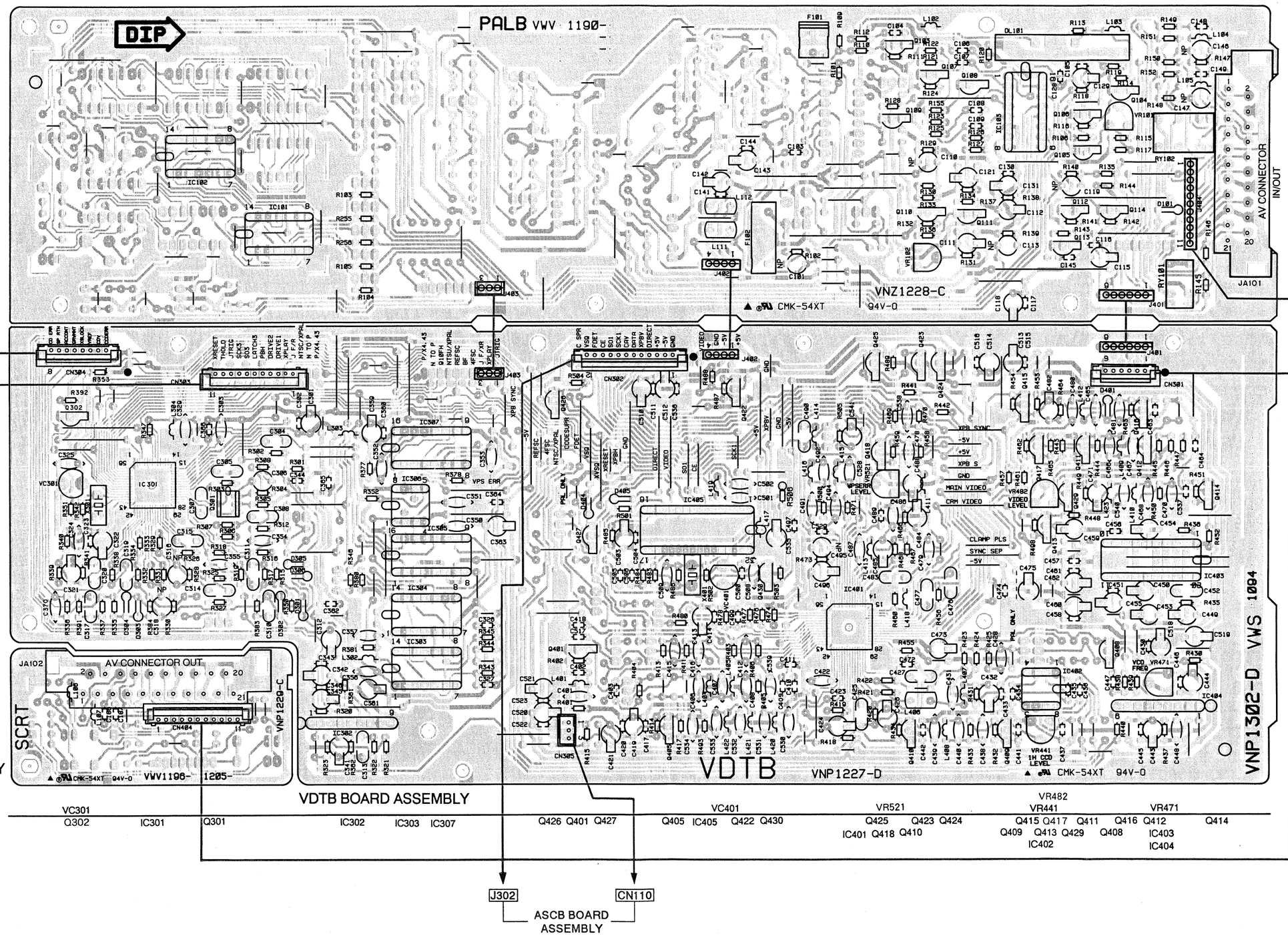
5.8 VDTB BOARD ASSEMBLY (VDEM SECTION)



7 8 9 10 11 12

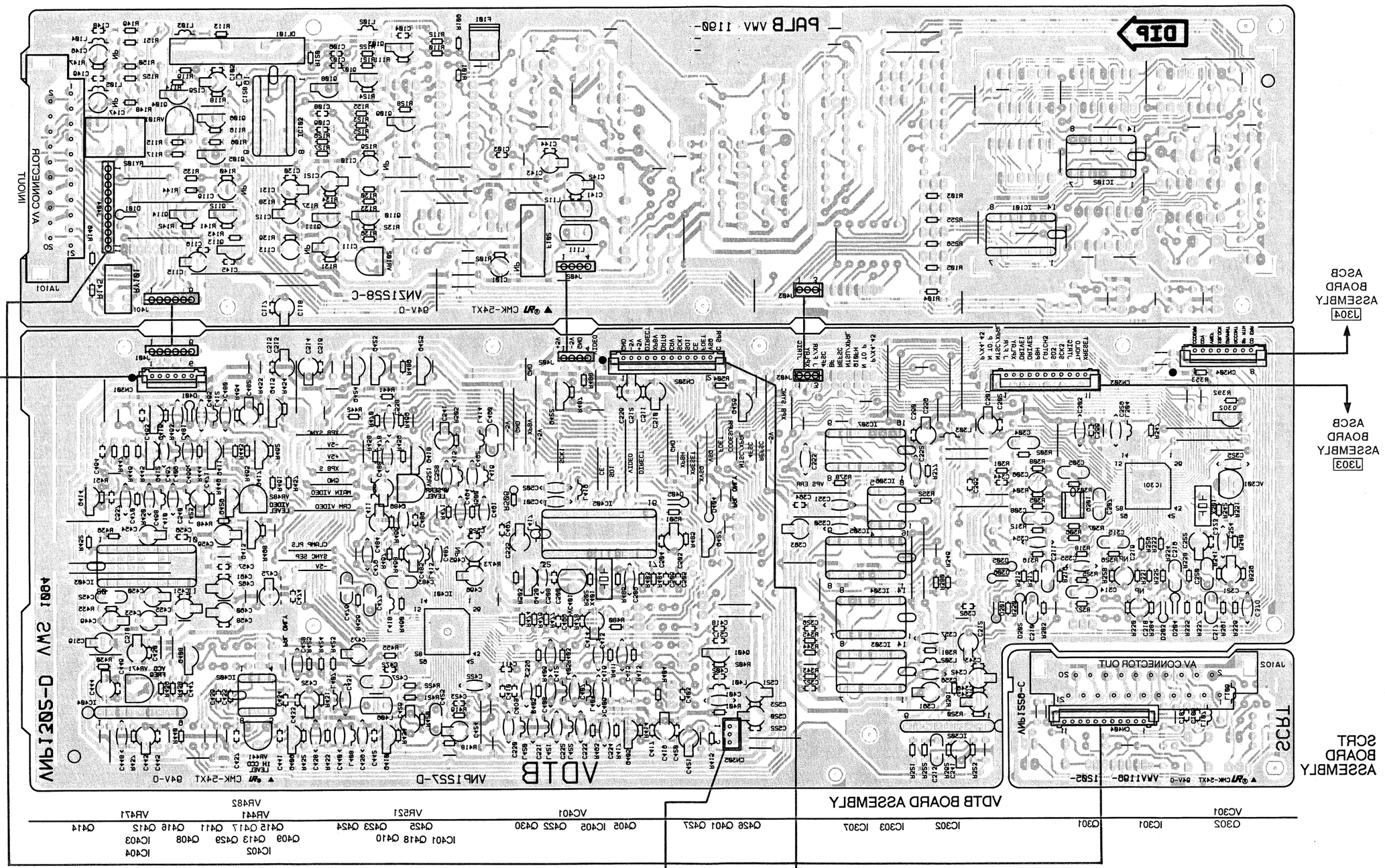
PALB BOARD ASSEMBLY

IC102 IC101 Q103 Q109 Q107 Q110 Q108 Q111 VR102 IC103 Q112 Q113 Q106 Q105 Q104 Q114 VR101



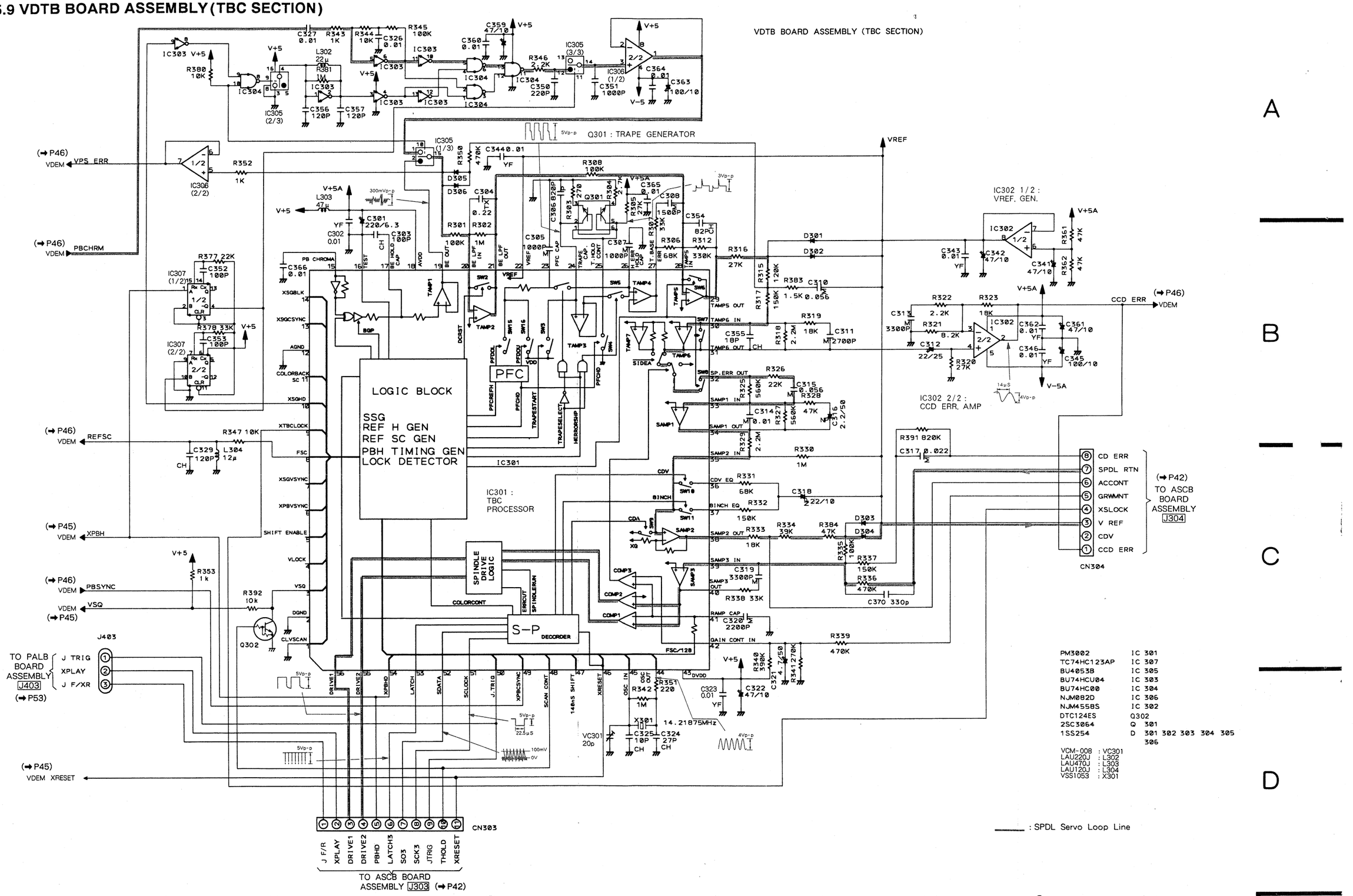
A B C D

7 8 9 10 11 12



This P. C. B. connection diagram is viewed from the foil side.

5.9 VDTB BOARD ASSEMBLY (TBC SECTION)



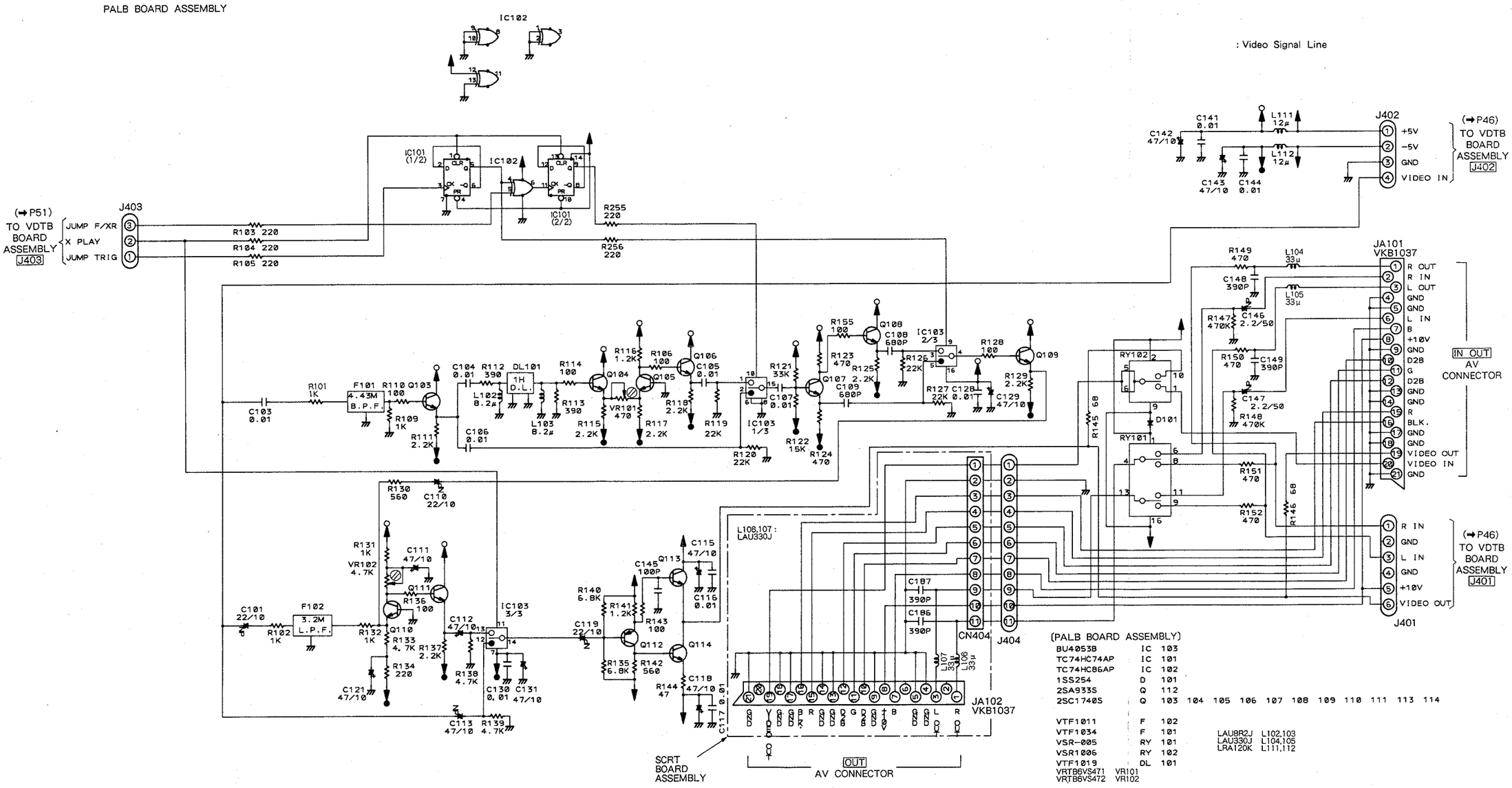
PM3002	IC 301
TC74HC123AP	IC 307
BU4053B	IC 305
BU74HCU04	IC 303
BU74HC00	IC 304
NJM082D	IC 306
NJM4558S	IC 302
DTC124ES	Q302
2SC3064	Q 301
1SS254	D 301 302 303 304 305 306

VCM-008 : VC301
LAU220J : L302
LAU470J : L303
LAU120J : L304
VSS1053 : X301

5.10 PALB AND SCRT BOARD ASSEMBLIES

PALB BOARD ASSEMBLY

: Video Signal Line

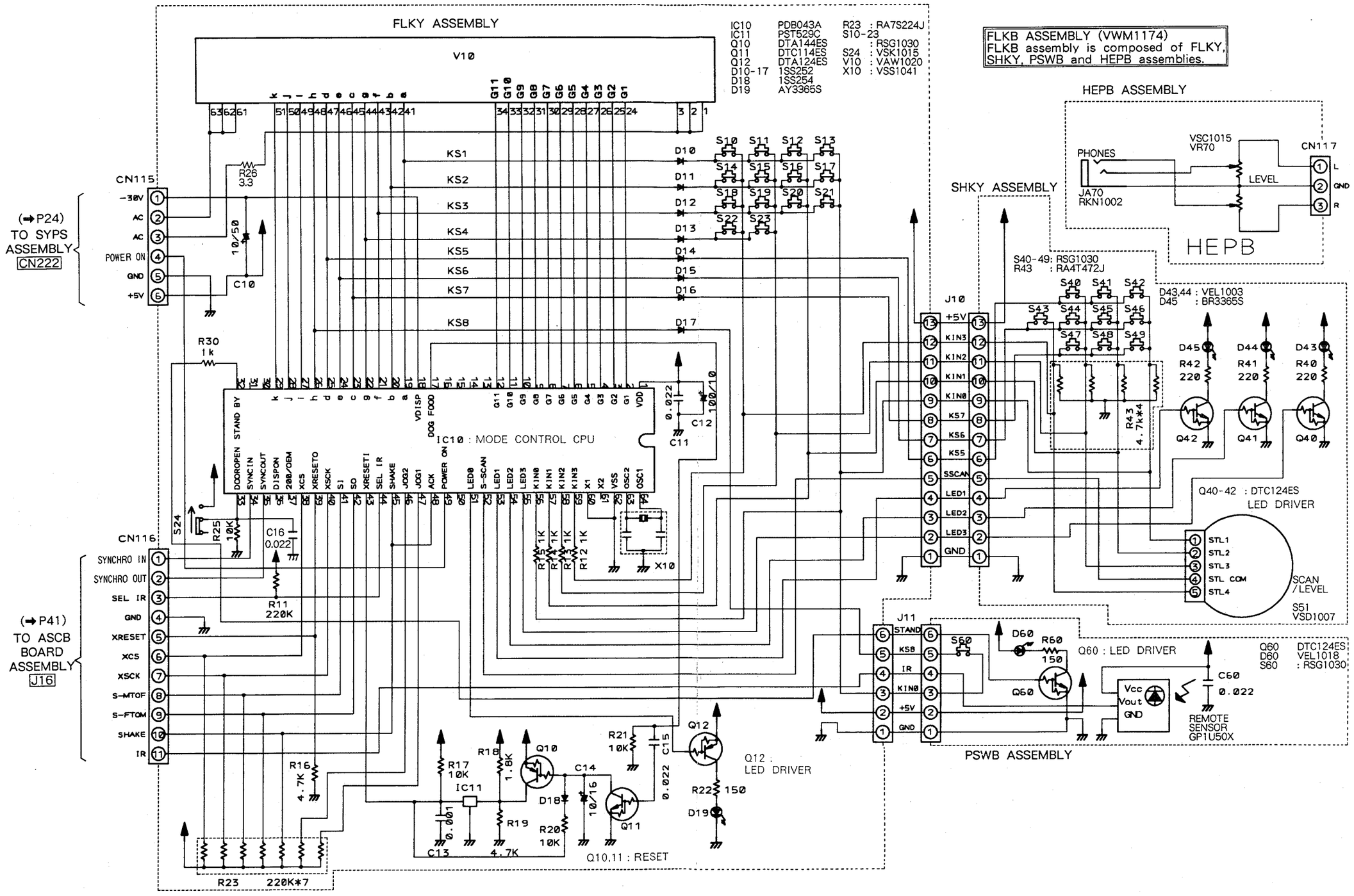


(PALB BOARD ASSEMBLY)

BU4053B	IC	103	
TC74HC74AP	IC	101	
TC74HC86AP	IC	102	
1SS254	D	101	
2SA933S	Q	112	
2SC1740S	Q	103 104 105 106 107 108 109 110 111 113 114	
VTF1011	F	102	
VTF1034	F	101	
VSR-005	RY	101	
VSR1006	RY	102	
VTF1019	DL	101	
VRTB6VS471	VR101		
VRTB6VS472	VR102		

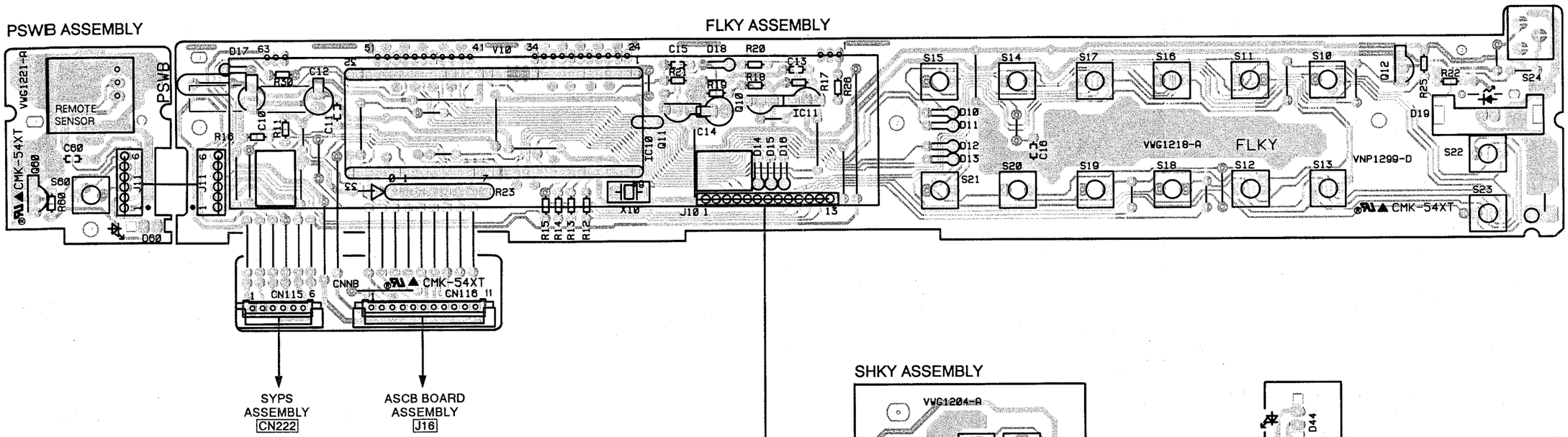
LAU8R2J L102,103
LAU330J L104,105
LRA120K L111,112

5.11 FLKY, HEPB, SHKY AND PSWB ASSEMBLIES

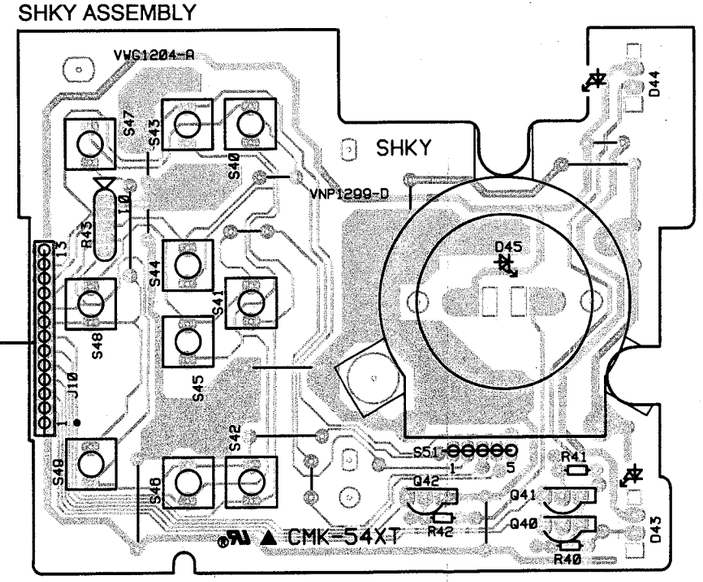


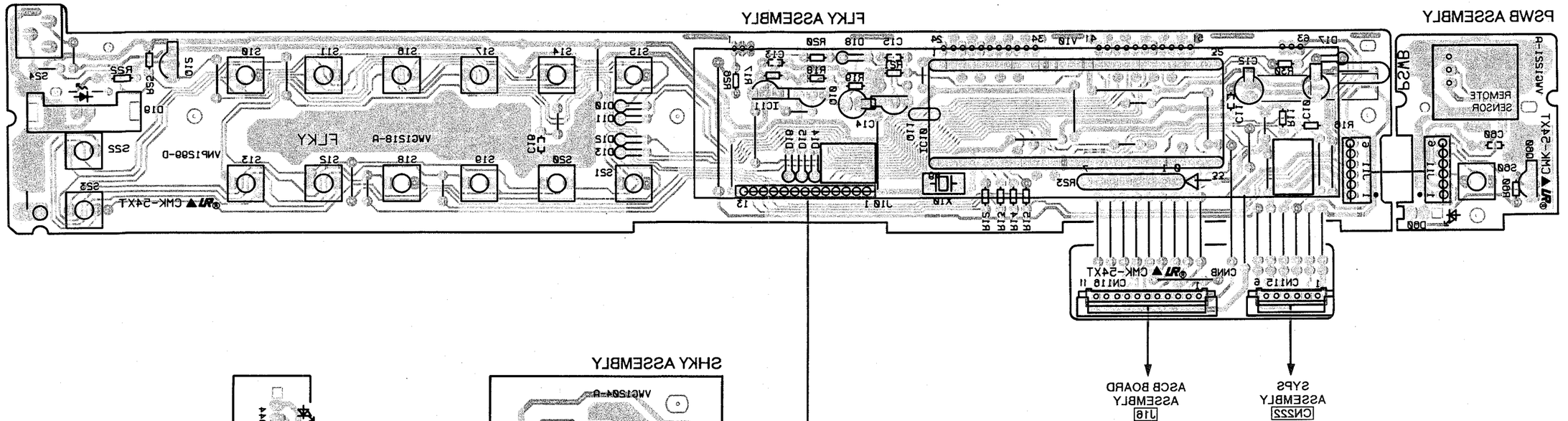
PSWB ASSEMBLY

FLKY ASSEMBLY



SHKY ASSEMBLY





This P. C. B. connection diagram is viewed from the foil side.

6. ELECTRICAL PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by" ◉ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω→56 × 10¹ →561 ····· *RD1/4PS 5 6 1 J*
47k Ω→47 × 10³ →473 ····· *RD1/4PS 4 7 3 J*
0.5 Ω→0R5 ····· *RN2H 0 R 5 K*
1 Ω→010 ····· *RS1P 0 1 0 K*

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω→562 × 10¹ →5621 ····· *RN1/4SR 5 6 2 1 F*

Miscellaneous Parts

Mark	Symbol & Description	Part No.
◉	MAIN board assembly ├ASCB board assembly ├FG board assembly └SW1 board assembly	VWM1163
◉	VTPB board assembly ├VDTB board assembly ├PALB board assembly └SCRT board assembly	VWM1167
◉	FLKB assembly ├FLKY assembly ├SHKY assembly ├PSWB assembly └HEPB assembly	VWM1174
◉	SYPS assembly HEAD assembly	VWR1093
⚠	FU201, FU202 Fuse (T3.15A)	REK-105
⚠	FU203, FU204 Fuse (T1.25A)	REK-101
⚠	AC power cord	VDG1028
⚠	Strain relief	CM-22B
⚠	Power transformer	VTT1062
	S4, S5 Push switch (INNER, OUTER)	DSG1014
	S6 Push switch (TRAY IN)	DSG1014
	Carriage motor assembly	VXX1261
	Loading motor assembly	VXX1262
	Spindle motor assembly	VXA1474
	Pre-pickup assembly	VXX1413
	Servo mechanism base assembly-S	VXX1583

◉ MAIN Board Assembly (VWM1163)

MAIN board assembly is composed of the ASCB, FG and SW1 board assemblies.

ASCB Board Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC802	BA15218N
	IC801	CXA1081S
	IC201	CXD2500AQ
	IC700	HA12127ANT
	IC804	LA6510L
	IC701	NJM4558D
	IC211,IC213	NJM5532SD
	IC205	NJM78L08A
	IC206	NJM79L08A
	IC101	PD0105A1
	IC803	PM3003
	IC209	SAA7350
	IC202	SM5840AP
	IC212,IC214	TC4S66F-TR
	IC204,IC215	M5218AP
	Q202,Q213,Q216,Q770,Q820,Q824, Q826,Q829,Q830,Q905	DTA124EK
	Q303,Q304	DTA124ES
	Q101,Q208,Q211,Q215,Q771,Q811, Q823,Q827,Q828,Q832,Q906	DTC124EK
	Q206,Q301	DTC124ES
	Q207,Q210,Q706,Q707,Q802,Q812, Q819,Q900	2SA1037K
	Q205,Q302,Q772,Q775	2SA933S
	Q816,Q818	2SB1185
	Q204	2SB1237X
	Q203,Q773,Q774	2SC1740S
	Q201,Q801,Q803-Q805,Q807,Q810, Q814,Q825,Q831	2SC2412K
	Q815,Q817	2SD1762

Mark	Symbol & Description	Part No.
	Q822	2SD1858X
	Q209,Q212	2SD2144S
	Q821	2SK184
	D201	FC54M
	D301	MTZ10C
	D802,D803	04AZ2.0-X
	D101-D103,D302,D705,D708,D770, D771,D801,D804-D807	1SS254

COILS AND FILTERS

Mark	Symbol & Description	Part No.
	L804	LAU100J
	L801,L803	LAU151J
	L802	LAU181J
	L101	LAU560J
	L221	LAU680J
	F701 B.P.F. (684kHz)	VTF1035
	F702 B.P.F. (1066kHz)	VTF1036

CAPACITORS

Mark	Symbol & Description	Part No.
	C293,C294	CCCCH221J50
	C253,C255,C269,C271	CCCCH390J50
	C871	CCCSL221J50
	C280,C330	CCCSL331J50
	C254,C256,C270,C272	CCCSL471J50
	C817,C899	CCSQCH050C50
	C123,C124,C722,C760,C810,C811, C822	CCSQCH101J50
	C232	CCSQCH220J50
	C724,C761	CCSQCH221J50
	C812,C815,C942	CCSQCH270J50
	C104,C105	CCSQCH300J50
	C717	CCSQCH360J50
	C804,C884,C929	CCSQCH470J50
	C750	CCSQCH620J50
	C809,C813	CCSQCH680J50
	C837,C844,C846	CCSQSL331J50
	C818	CCSQSL471J50
	C714,C748,C819	CCSQSL561J50
	C205,C866	CEANPR47M50
	C225,C807,C816,C845	CEANP010M50
	C745,C842,C863	CEANP100M16
	C850	CEANP2R2M50
	C716,C752,C755	CEANP220M10
	C351	CEANP3R3M16
	C870	CEANP470M10
	C728	CEASR47M50
	C808,C814,C823,C840	CEAS010M50
	C762,C855,C862,C864	CEAS100M50
	C101,C229,C248,C712,C729,C732, C746,C765,C859,C932,C939,C941, C945	CEAS101M10
	C281,C283,C331,C333,C350	CEAS101M25
	C227,C228,C744,C757,C835,C836, C841,C876,C877,C931,C938	CEAS220M25
	C242,C244	CEAS221M25
	C241	CEAS221M50
	C203,C208,C211,C216,C944	CEAS221M6R3
	C730	CEAS4R7M50
	C214,C230,C246,C247,C249,C251, C257,C259,C261,C263,C265,C267, C273,C275,C341,C342,C713,C747 C857,C940	CEAS470M10
	C285,C335	CEAS470M25
	C723	CEJANP100M16
	C725	CEJA100M16
	C710,C824,C849,C865,C873	CFTNA103J50
	C754,C830,C838,C874,C878,C880	CFTNA104J50
	C883	CFTNA124J50
	C226,C843	CFTNA223J50
	C827,C867	CFTNA333J50
	C727,C764,C848,C869	CFTNA473J50
	C847,C868	CFTNA683J50
	C721,C759	CFTXA152J50
	C720,C758	CFTXA472J50
	C726,C763	CFTXA822J50
	C122	CKCYF103Z50
	C245	CKPUYB101K50
	C286,C336	CKPUYB331K50
	C252,C274	CKPUYF223Z25
	C346,C347,C858	CKPUYY103N16
	C711,C719,C731,C733,C753,C756	CKSQYB102K50
	C202	CKSQYB152K50
	C875,C879	CKSQYB562K50
	C854	CKSQYB821K50
	C103,C106,C120,C121,C206,C213, C218,C231,C234,C707,C708,C769, C771-C773,C803,C805,C828,C829, C856,C860,C861,C943	CKSQYF103Z50
	C204,C209,C212,C215,C217,C288, C338,C344,C345,C872,C881,C882	CKSQYF104Z25
	C102,C201,C210,C258,C260,C262, C264,C266,C268,C276,C820,C821	CKSQYF473Z25
	C839	CQMA102J50
	C770	CQMA103J50
	C834	CQMA152J50
	C279,C329	CQMA222J50
	C774,C775	CQMA272J50
	C853	CQMA332J50
	C825	CQMA682J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR602,VR603 Semi-fixed (10kΩ)	VRTB6VS103
	VR601 Semi-fixed (2.2kΩ)	VRTB6VS222
	VR607 Semi-fixed (22kΩ)	VRTB6VS223
	VR608 Semi-fixed (33kΩ)	VRTB6VS333
	VR604-VR606,VR609 Semi-fixed (4.7kΩ)	VRTB6VS472
	R290 Fusible (10Ω)	DCN1002
	R850,R862	RS1LMF3R3J
	R303	RS2LMF560J
	R133,R134,R150,R151,R214,R215, R220,R221,R251,R252,R254-R256, R258,R260-R267,R276,R278, R280-R287,R293,R301,R302,R304, R310-R313,R326,R328,R340, R344-R346,R351,R352,R390-R394, R397,R781-R794,R849,R873,R874, R877,R910-R913,R923,R944, R946-R949,R951	RD1/6PM□□□J
	Other resistors	RS1/10S□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X101 Ceramic resonator (9.00MHz)	VSS1040
	X201 Crystal resonator (16MHz)	VSS1051
	CN201 5P top post	B5P-SHF-1AA
	CN103 23P top connector	VKN1073
	JA3 Optical digital module (DIGITAL OUT OPTICAL)	GP1F32T
	JA1 Mini jack (CD•DECK SYNCHRO)	RKN1014
	JA4 3P pin jack (VIDEO OUT, AUDIO OUT (L, R))	VKB1038
	JA2 2P mini jack (CONTROL (IN, OUT))	VKN-183

FG Board Assembly

OTHER

Mark	Symbol & Description	Part No.
	Photo interrupter	GP1S51

SW1 Board Assembly

SWITCHES

Mark	Symbol & Description	Part No.
	S1-S3 Push switch (LOADING/TILT)	DSG1015

◉ VTPB Board Assembly (VWM1167)

VTPB board assembly is composed of the VDTB, PALB and SCRT board assemblies.

VDTB Board Assembly

SEMICONDCTORS

Mark	Symbol & Description	Part No.
	IC305	BU4053B
	IC303	BU74HCU04
	IC304	BU74HC00
	IC403	CXL1009P
	IC405	M50554-132SP
	IC306	NJM082D
	IC302	NJM4558S
	IC404	PA0017
	IC401	PA5013A
	IC402	PM0001
	IC301	PM3002
	IC307	TC74HC123AP
	Q425	DTA124ES
	Q302,Q426,Q427	DTC124ES
	Q410,Q414-Q416,Q430	2SA933S
	Q423	2SB1237X
	Q401,Q405,Q408,Q409,Q411-Q413, Q417,Q418,Q422,Q429	2SC1740S
	Q301	2SC3064
	Q424	2SD1858X
	D301-D306,D401,D404,D405	1SS254

COILS AND FILTERS

Mark	Symbol & Description	Part No.
	L304,L404,L405,L413,L417	LAU120J
	L409	LAU181J
	L302,L410	LAU220J
	L407,L408,L415	LAU221J
	L412,L416	LAU330J
	L419,L420,L422	LAU390J
	L303	LAU470J
	L414,L421	LAU560J
	L401,L423	LAU680J
	L411,L418	LAU820J
	L406	LRA471K

CAPACITORS

Mark	Symbol & Description	Part No.
	VC301,VC401 Ceramic trimmer (20p)	VCM-008
	C508	CCCCH050C50
	C303,C352,C353,C412,C431,C438	CCCCH101J50
	C540	CCCCH120J50
	C329,C356,C357	CCCCH121J50
	C509	CCCCH150J50
	C428,C467,C481	CCCCH151J50
	C539	CCCCH180J50
	C448,C478,C479	CCCCH220J50
	C324,C465,C530	CCCCH270J50
	C407,C440	CCCCH330J50
	C422,C470,C487,C492,C533	CCCCH390J50
	C494,C532	CCCCH470J50
	C480,C491	CCCCH560J50
	C468	CCCCH680J50
	C354,C401,C402	CCCCH820J50
	C350	CCCSL221J50
	C439	CCCSL271J50
	C325,C406,C408,C466,C501,C502, C528,C531,C534	CCPUCH100J50
	C355,C415,C416	CCPUCH180J50
	C495	CEANP100M16
	C316	CEANP2R2M50
	C318	CEANP220M10
	C421,C449,C541	CEAS010M50
	C485	CEAS100M50
	C345,C363,C413,C419,C426,C432, C444,C459,C460,C496,C512,C514, C519,C521	CEAS101M10
	C312,C462,C482	CEAS220M25
	C301	CEAS221M6R3
	C450,C453,C454	CEAS3R3M50
	C321,C424	CEAS4R7M50
	C322,C341,C342,C359,C361,C443, C455,C471,C473,C475,C484,C488, C503,C510,C513,C518,C520,C535	CEAS470M10
	C314	CFTNA103J50
	C476	CFTNA104J50
	C427	CFTNA153J50
	C317	CFTNA223J50
	C304,C452	CTFNA224J50
	C490	CFTNA473J50
	C310,C315	CFTNA563J50
	C477,C483	CFTNA683J50
	C351,C486,C538	CKCYB102K50
	C370	CKPUYB331K50
	C302,C323,C326,C327,C343,C344, C346,C360,C362,C364-C366,C403, C409-C411,C414,C417,C418,C420, C423,C430,C433-C437,C441,C442, C445-C447,C451,C456-C458, C461,C463,C464,C472,C474,C489, C497,C499,C500,C504-C506,C511, C515-C517,C522,C523,C529,C536, C537	CKPUYY103N16
	C305,C307	CQMA102J50
	C308	CQMA152J50
	C320	CQMA222J50
	C311,C425	CQMA272J50
	C313,C319	CQMA332J50
	C306	CQPA821J100

RESISTORS

Mark	Symbol & Description	Part No.
	VR471,VR482,VR521 Semi-fixed (4.7kΩ)	VRTB6VS472
	VR441 Semi-fixed (10kΩ)	VRTB6VS103
	R411,R413,R419,R420,R455	RN1/6PQ□□□□F
	Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X401 Crystal resonator (17.734MHz)	VSS1019
	X301 Crystal resonator (14.22MHz)	VSS1053

PALB Board Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC103	BU4053B
	IC101	TC74HC74AP
	IC102	TC74HC86AP
	Q112	2SA933S
	Q103-Q111,Q113,Q114	2SC1740S
	D101	1SS254

RELAYS

Mark	Symbol & Description	Part No.
	RY101 Relay	VSR-005
	RY102 Relay	VSR1006

COILS AND FILTERS

Mark	Symbol & Description	Part No.
	L104,L105	LAU330J
	L102,L103	LAU8R2J
	L111,L112	LRA120K
	F102 L.P.F. (3.2MHz)	VTF1011
	F101 B.P.F. (4.43MHz)	VTF1034

CAPACITORS

Mark	Symbol & Description	Part No.
	C146,C147	CEANP2R2M50
	C101,C110,C119	CEANP220M10
	C113	CEANP470M10
	C111,C112,C115,C118,C121,C129, C131,C142,C143	CEAS470M10

Mark	Symbol & Description	Part No.
	C145	CKPUYB101K50
	C148,C149	CKPUYB391K50
	C108,C109	CKPUYB681K50
	C103-C107,C116,C117,C128,C130, C141,C144	CKPUYY103N16

RESISTORS

Mark	Symbol & Description	Part No.
	VR101 Semi-fixed (470Ω)	VRTB6VS471
	VR102 Semi-fixed (4.7kΩ)	VRTB6VS472
	Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	JA101 RGB connector (AV connector)(IN/OUT)	VKB1037
	DL101 64 μsec delay line	VTF1019

SCRT Board Assembly

COILS

Mark	Symbol & Description	Part No.
	L106,L107	LAU330J

CAPACITORS

Mark	Symbol & Description	Part No.
	C186,C187	CKPUYB391K50

OTHERS

Mark	Symbol & Description	Part No.
	JA102 RGB connector (AV connector)(OUT)	VKB1037

◉ FLKB Assembly (VWM1174)

FLKB assembly is composed of the FLKY, SHKY, PSWB and HEPB assemblies.

FLKY Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	IC10	PDB043A
	IC11	PST529C
	Q12	DTA124ES
	Q10	DTA144ES
	Q11	DTC114ES
	D10-D17	1SS252
	D19	AY3365S
	D18	1SS254

SWITCHES

Mark	Symbol & Description	Part No.
	S10-S23 Tact switch (PGM, DIRECT SEARCH (0-9, +10), DIRECT CD, SINGLE)	RSG1030
	S24 Door switch	VSK1015

CAPACITORS

Mark	Symbol & Description	Part No.
	C10	CEAS100M50
	C12	CEAS101M10
	C14	CEJA100M16
	C13	CKPUYB102K50
	C11,C15,C16	CKPUYF223Z25

RESISTORS

Mark	Symbol & Description	Part No.
	R23 Resistor array	RA7S224J
	Other resistors	RD1/6PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	X10 Ceramic resonator (6.00MHz)	VSS1041
	FL spacer	VEB1125
	V10 Fluorescent indicator tube	VAW1020

SHKY Assembly

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
	Q40-Q42	DTC124ES
	D45	BR3365S
	D43,D44	VEL1003

SWITCHES

Mark	Symbol & Description	Part No.
	S40-S49 Tact switch (DIGITAL LEVEL CTRL, PGM EDIT, LANGUAGE, RANDOM PLAY, HILITE INTRO SCAN, SKIP (⏮, ⏭), OPEN/CLOSE (▲), STOP (■), PLAY/PAUSE (▶/❚❚))	RSG1030
	S51 Rotary encoder (SCAN/LEVEL)	VSD1007

RESISTORS

Mark	Symbol & Description	Part No.
	R43 Resistor array	RA4T472J
	R40-R42	RD1/6PM221J

PSWB Assembly

SIMICONDUCTORS

Mark	Symbol & Description	Part No.
	Q60	DTC124ES
	D60	VEL1018

SWITCH

Mark	Symbol & Description	Part No.
	S60 Tact switch (POWER)	RSG1030

CAPACITOR

Mark	Symbol & Description	Part No.
	C60	CKPUYF223Z25

RESISTOR

Mark	Symbol & Description	Part No.
	R60	RD1/6PM151J

OTHER

Mark	Symbol & Description	Part No.
	IR sensor unit	GP1U50X

HEPB Assembly

RESISTOR

Mark	Symbol & Description	Part No.
	VR70 Double rotary volume (LEVEL)	VCS1015

OTHER

Mark	Symbol & Description	Part No.
	JA70 Headphone jack (PHONES)	RKN1002

◉ SYPS Assembly (VWR1093)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
⚠	IC201	ICP-N15
	IC202	ICP-N15
	IC206	ICP-N25
⚠	IC205	NJM78M05FA
	Q217	DTA114ES
	Q213	DTC114ES
	Q214,Q219	2SA933S
	Q202,Q203,Q205	2SB1185
⚠	Q207	2SB1238X
	Q218	2SC1740S
	Q201,Q204,Q206	2SD1762
	D220	MTZJ22C
	D102,D104	MTZJ5.1C
	D101,D103	MTZJ5.6B
⚠	D201,D202	S2VB20
⚠	D213,D214	1SR35-100AVL
	D222,D223	1SR35-100AVL
	D208,D209	1SS252
⚠	D216,D217	1SS252
	D212,D215	10ELS2

COILS

Mark	Symbol & Description	Part No.
⚠	L202 Line filter	VTL-157
⚠	L201 Coil (10mH)	VTL1008

CAPACITORS

Mark	Symbol & Description	Part No.
	C209,C210,C226,C231,C232,C242, C245	CEAS101M10
	C223	CEAS101M25
	C219	CEAS101M35
	C235	CEAS102M25
	C214,C215	CEAS2R2M50
	C240,C243	CEAS221M10
	C213	CEAS471M35
	C208	CEAS472M10
	C207	CEAS682M10
	C212,C237,C238	CGCYX473M25
	C196-C199,C246	CKCYF103Z50
	C241,C244	CKPUYB102K50
	C201-C204	CKPUYF103Z25
⚠	C216,C217 (0.01 μ)	VCG-048
	C205,C206 (3300/25V)	VCH1095

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R221	RS1LMFR51J
	R239	RS1LMF4R7J
	R231 Fusible (22Ω)	VCN1029
	Other resistors	RD1/6PM□□□J

HEAD Assembly

CAPACITORS

Mark	Symbol & Description	Part No.
	C1	CKSQYF473Z50
	C5	CKSYF105Z16

RESISTOR

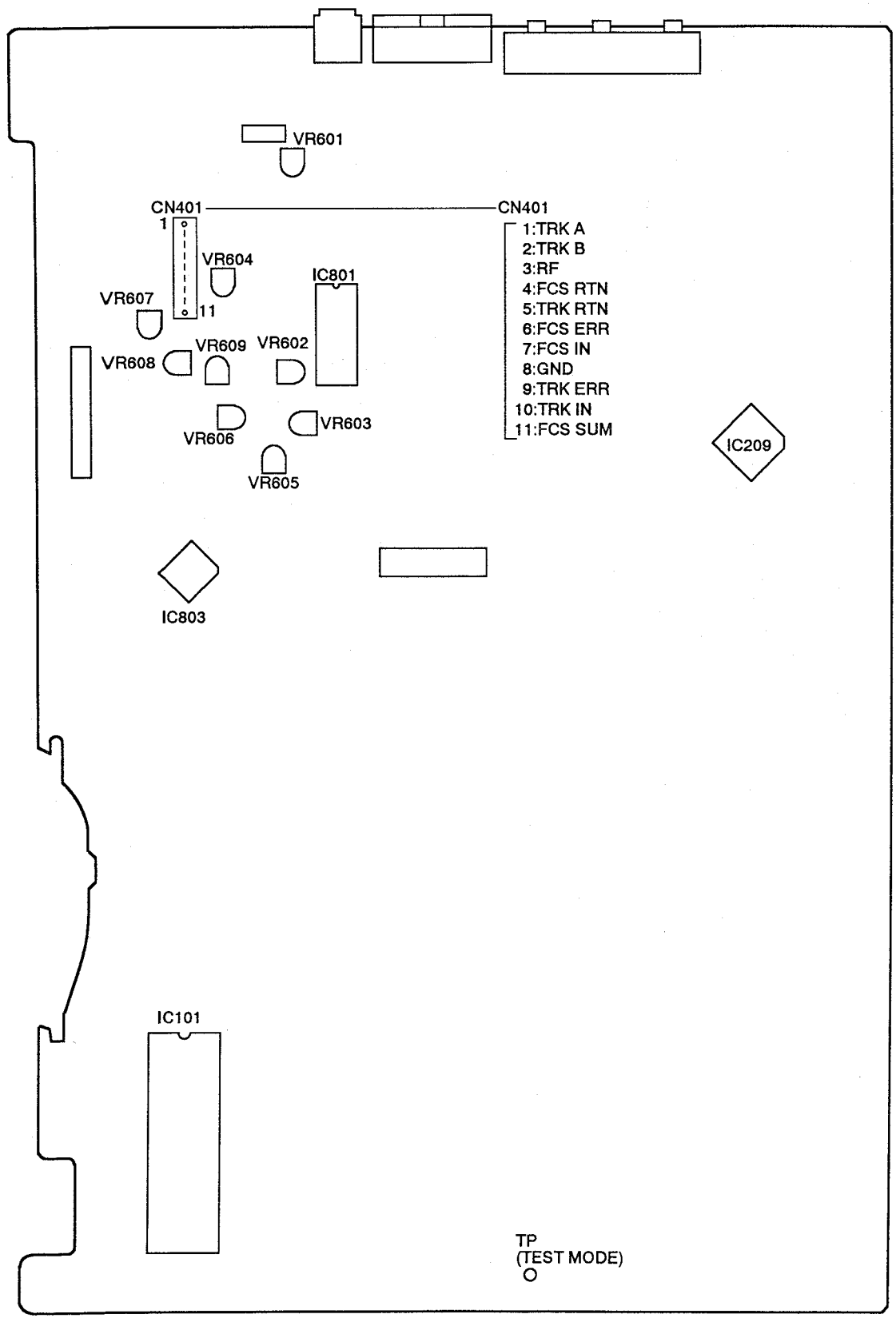
Mark	Symbol & Description	Part No.
	VR1 Semi-fixed (10kΩ)	VCP1040

7. ADJUSTMENTS

7.1 ASCB BOARD ASSEMBLY ADJUSTMENT SUMMARY

	ADJUSTMENT	Adjusting Point	Measurement equipment Connecting Point	Player Condition	Adjusting Specification
1	Tilt Servo Gain Adjustment	VR608	None	Power off	• Making of Tilt GAIN VR position Red :Turn to Right Clear : Center Blue :Turn to Left
2	Coarse Adjustment of Grating and TRK Balance Adjustment	Grating/VR602	CN401-9 (TRK ERR)	• Test mode #15,000 TRK servo loop open	• Null point → TRK error MAX • Adjust VR602 so that the TRK error waveform amplitude's positive and negative level become equal.
3	Slider Shaft Horizontal Adjustment	Player SKIP key	CN401-4 (FCS RTN)	• Test mode Tilt servo loop off TRK servo loop open #5,200	• Use the SKIP key to adjust to 0V ± 20mV.
4	Pickup Inclination Adjustment	Pickup Assembly TAN / TRK inclination adjustment screw	CN401-3(RF)	• Test mode #2,251 still TRK servo loop close /open Tilt servo loop open	• RF waveform's amplitude MAX (Pickup TAN / TRK adjustment screw) • Minimized crosstalk.
5	TRKG Error Best / Crosstalk Best Adjustment	VR605 (TE BEST) VR606 (CT BEST)	CN401-9(TRK ERR) CN401-3(RF)	• Test mode TRK servo close / open Tilt servo loop off	• RF MAX (VR606) TRK error MAX (VR605)
6	FOCS SUM Level Adjustment	VR609	CN401-11 (FCS SUM)	• Play mode	• Adjust VR 609 so that the voltage becomes 1.5VDC.
7	Tilt Sensor Inclination / Tilt Balance Adjustment	Tilt sensor inclination adjustment screw VR607(TILT BAL)	TV monitor Test mode screen	• Test mode #16,200 / #475 still TRK servo loop close Tilt servo loop off	• Set VR 607 to the center. • Adjust the adjustment screw so that the tilt error display code is 6,7, or 8. • Adjust VR607 so that the tilt error display becomes 7.
8	Verification and Adjustment of Spindle Motor Centering	Spindle motor centering adjustment screw.	CH1:CN401-9 (TRK ERR) CH2:CN401-1, 2 (TRK SUM) (X-Y mode)	• Test mode #23,800 / #3,000 TRK servo loop open Tilt servo loop on	• Adjust the centering adjustment screw so that the lissajous figures of #3,000 and #23,800 are the same.
9	Fine Adjustment of Grating and TRK Balance Adjustment	Grating / VR602	CH1:CN401-9 (TRK ERR) CH2:CN401-1, 2 (TRK SUM) (X-Y mode)	• Test mode TRK servo loop open Tilt servo loop on	• Minimize the Y direction of the lissajous figure. • Level of the X direction of the lissajous figures are equal.
10	FCS Servo Loop Gain Adjustment	VR604	CH1:CN401-7 (FCS IN) CH2:CN401-6 (FCS ERR) (X-Y mode)	• Test mode #15,000 still TRK servo loop close Tilt servo loop on	• Adjust VR604 so that the lissajous figure is symmetric with respect to the X and Y axes.
11	TRK Servo Loop Gain Adjustment	VR603	CH1:CN401-10 (TRK IN) CH2:CN401-9 (TRK ERR) (X-Y mode)	• Test mode #15,000 still TRK servo loop close Tilt servo loop on	• Adjust VR603 so that the lissajous figure is symmetric with respect to the X and Y axes.
12	RF Gain Adjustment	VR601	CN401-3(RF)	• #15,000 still	• Adjust VR601 so that the RF level becomes 300mV ± 50mV.

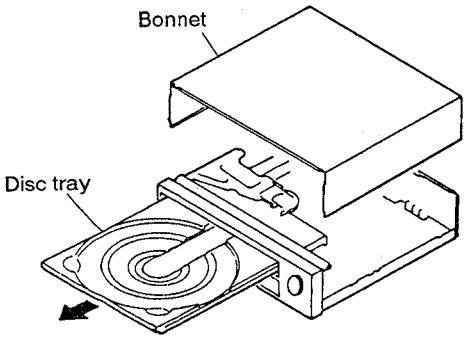
7.2 ADJUSTMENT POINTS OF THE ASCB BOARD ASSEMBLY



7.3 TEST MODE

7.3.1 TEST MODE

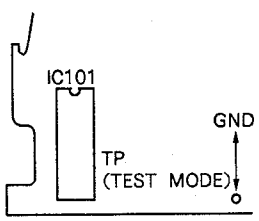
The player has a test mode function which allows the servicer to check the player's status on the TV screen by executing the respective key operation.
Also, since the TRK servo opens and closes easily, the test mode is especially useful for mechanical adjustments.



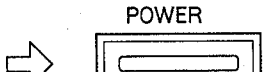
7.3.2 TEST MODE INITIATION

[Procedure]

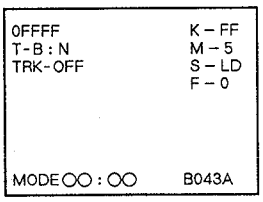
1. Remove the bonnet and disc tray.
2. Connect the TP(TEST MODE) in the ASCB board assembly to GND.
3. Turn on the power switch.
4. Disconnect the TP from GND.



Connect TP and GND.



Turn on the power switch.



TV screen display

7.3.3 TEST MODE CANCELLATION

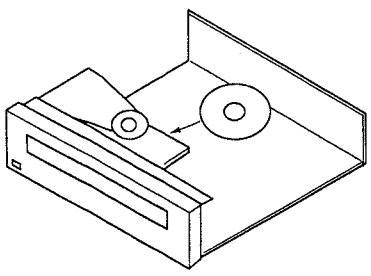
Turn off the power switch.

7.3.4 PLAYER OPERATION IN THE TEST MODE

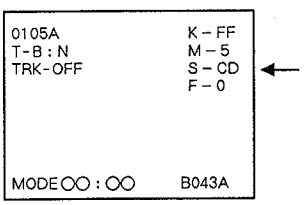
Operate the player by selecting a test mode function with the keys on the player or on the remote control unit.

- CD PLAYBACK

① Place the CD disc on the turn table. (Clamper is already lifted up.)



② Press the ◀◀ or ▶▶ key to appear "S-CD" on the TV screen display.

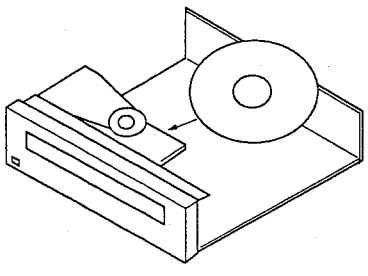


TV screen display

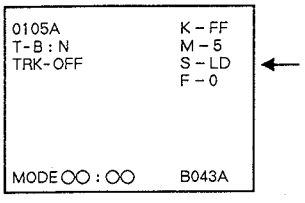
③ Clamp the disc by pressing the PLAY (▶) key once. Then, press the PLAY (▶) key twice, disc will be normal playbacked.

- LD PLAYBACK

① Place the LD disc on the turn table. (Clamper is already lifted up.)



② Press the ◀◀ or ▶▶ key to appear "S-LD" on the TV screen display.



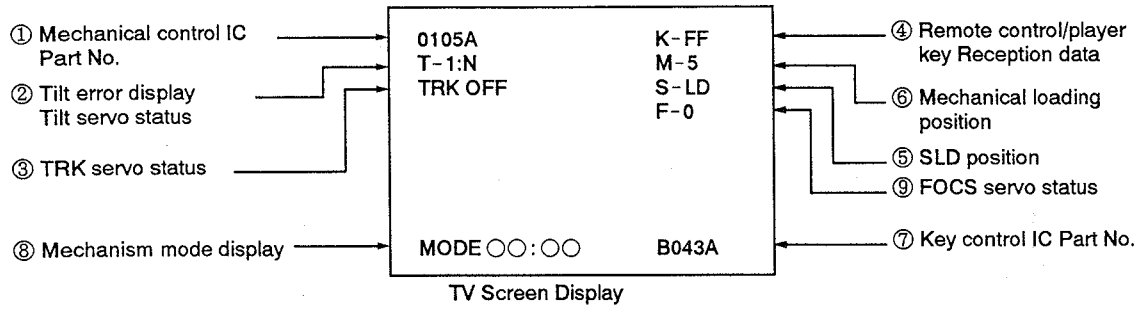
TV screen display

③ Clamp the disc by pressing the PLAY (▶) key once. Then, press the PLAY (▶) key twice, disc will be normal playbacked.

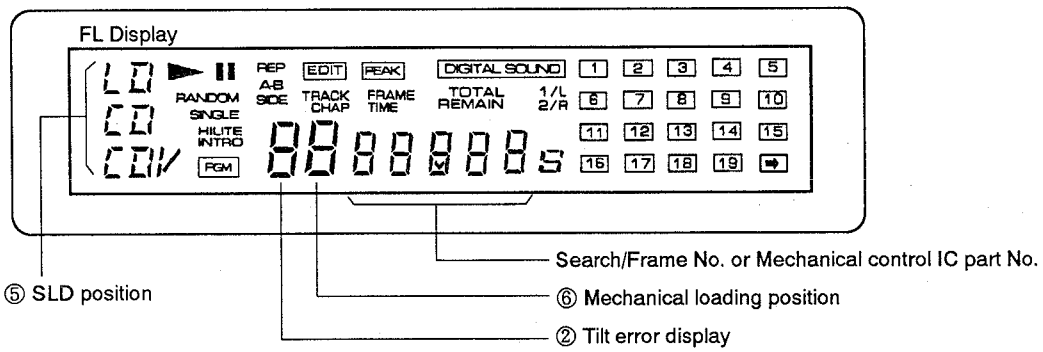
Table. Operation in the test mode.

Function	Player Status	Key Operation	Remarks
Open Tray	STOP mode	▲	
Close Tray	Tray open	▲	
Stop	PLAY mode	■	
Play	Disc placement and tray closed.	▶	• Start play with the TRK servo open. • Start play with tilt neutral. • The disc type (LD/CD/CDV) is determined when playback starts at the SLDR position during start play.
TRK Servo Open/Close	PLAY mode	▶	• Each time the PLAY button (▶) is pressed, the TRK servo will open or close alternately.
Still	PLAY mode TRK servo closed.	❚❚ (Remote control unit key)	• Each time the PAUSE button (❚❚) is pressed, the player will switch between the PLAY and STILL modes alternately.
SLDR REV SCAN	PLAY mode	◀◀	• Counterclockwise • With the TRK servo open, the pickup can be damaged if the SLD moves further inward than the lead-in area on the disc. Do not allow the SLD to move further inward than the lead-in area .
SLDR FWD SCAN	PLAY mode	▶▶	• Clockwise • With the TRK servo open, the pickup can be damaged if the SLD moves further outward than the lead-in area on the disc. Do not allow the SLD to move further outward than the lead-in area.
TILT Neutral	POWER switch ON	EDIT	
TILT Servo ON	PLAY mode	RANDOM PLAY	
TILT Minus TILT Servo OFF	PLAY mode	|◀◀	• Press and hold down the keys.
TILT Plus TILT Servo OFF	PLAY mode	▶▶|	• Press and hold down the keys.
Screen Display ON/OFF	POWER switch ON	PGM key	
Frame search	PLAY mode	+10 key ↓ 0-9 key ↓ ▶	• In the PLAY mode, press the +10 key. (The player will standby for the frame No. entry.) • Use the numeric keys(0 – 9) to enter the frame No.. Then press the player's PLAY key to search. • After the search is completed, the player will return to the previous mode before the search was performed.
Loading Motor Rotation Clockwise Counterclockwise	Tray open	▶▶| |◀◀	• FWD:Unloading • REV :Loading
FOCS OFFSET (CT BEST) VR606 Check	PLAY mode (TRK servo OPEN)	(Remote control unit) MULTI-SPEED FWD →F-1 REV →F-0 (Player) HILITE INTRO SCAN	• For checking VR604 F-0 : Normal mode •When closing the TRK servo, VR606 (CT BEST) is effectived. •When opening the TRK servo, VR605 (TE MAX) is effectived. F-1 : When opening the TRK servo, VR606 (CT BEST) is also effectived.

7.3.5 TV SCREEN AND LED DISPLAYS IN THE TEST MODE



TV Screen Display



① The Mechanical Control IC (ASCB board assembly) Part No. will be Displayed.

PD0105A1 → 0105A

② Tilt Servo Status / Tilt Error Display

T-○:○○

- Tilt servo status : N...Tilt neutral
  ON...Tilt servo ON
  OFF...Tilt servo OFF
- Tilt error display: 0 Tilt −
  ↕ Tilt neutral
  F Tilt +

③ TRK Servo Status

TV screen display

TRK-○○○

└—ON...TRK servo close

OFF...TRK servo open

④ Remote Control / Player Key Reception Data

TV screen display

K-○○

└—See table below

Code	Function	Code	Function	Code	Function	Code	Function
00	0	20	F JOG0	40	(CHAP / TRK)	60	
01	1	21	F JOG1	41	(FRAM / TIM)	61	
02	2	22	F JOG2	42	(SEARCH)	62	
03	3	23	F JOG3	43	DISPLAY	63	
04	4	24	R JOG0	44	REPEAT B	64	
05	5	25	R JOG1	45	CLEAR	65	
06	6	26	R JOG2	46	SPEED –	66	
07	7	27	R JOG3	47	SPEED +	67	
08	8	28		48	REPEAT A	68	
09	9	29		49	(2 / R)	69	
0A	VOLUME +	2A		4A	(STEREO)	6A	
0B	VOLUME –	2B		4B	(1 / L)	6B	
0C	DGT / ANL	2C		4C	PROGRAM	6C	
0D		2D		4D		6D	PLAY /PAUSE
0E	CX ON/OFF	2E		4E		6E	STOP
0F	(TV / LDP)	2F		4F		6F	OPEN / CLOSE
10	(F-SCAN)	30		50	F-STEP	70	
11	(R-SCAN)	31		51		71	DIRECT CD
12		32		52	F-SKIP	72	PEAK
13	CHAP / FRME	33		53	R-SKIP	73	SINGLE
14		34		54	R-STEP	74	
15		35		55	R-MULT	75	
16	STOP / OPEN	36		56		76	
17	PLAY/SERCH	37	DGT LEVEL	57		77	
18	PAUSE	38		58	F-MULT	78	
19		39		59		79	
1A	(POW ON)	3A		5A	HILIT / INTR	7A	
1B	(POW OFF)	3B		5B		7B	
1C	POW ON/OFF	3C		5C		7C	
1D	EDIT	3D		5D		7D	
1E	AUDIO	3E		5E	RNDM (TEST)	7E	
1F	+10	3F		5F	(ESC)	7F	

⑤ SLD Position

TV screen display

S-○○○

└— IN ... CD inside SW ON

CD ... CD active area

CDV ... CDV active area

LD ... LD active area

⑥ Mechanical Loading Position

TV screen display

M-○

└— 0 ... Tray open

1 ... Loading

2 ... Standby

3 ... Clamped

5 ... Tilt minus

6 ... Tilt neutral (one side)

7 ... Tilt plus

8 ... Tilt limit

9 ... B side clamped (two sides)

⑦ Focus Offset VR Status

TV screen display

F-○

└— 0 ... Normal mode

•When closing the TRK servo, VR606 (CT BEST) is effectived.

•When opening the TRK servo, VR605 (TE MAX) is effectived.

1 ... When opening the TRK servo, VR606 (CT BEST) is also effectived.

7.4 ADJUSTMENTS

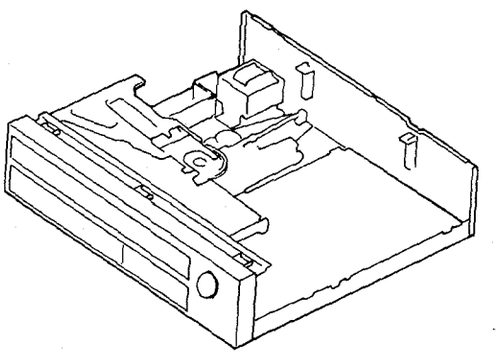
7.4.1 Required Instruments

- Small screwdriver (7 cm shaft)
- Small Phillips screwdriver (15 cm shaft)
- Low-pass filter (47k ohms+1 μF / BP)
- Dual-trace oscilloscope (with delay)
- AF oscillator
- Frequency counter
- LD test disc (GGV1007)
- 8-inch LDD disc
- CDV disc
- Short clip
- TV monitor
- Resistor (1k ohms, 47k ohms)
- Capacitor (0.01 μF, 0.0027 μF)
- Remote control unit
- 2mm hexagonal wrench

7.4.2 Adjustment Preparation and Notes

1. Player Preparation

Befor perform the adjustment, remove the bonnet and the disc tray. Then place the player horizontally on a flat surface.



2. Disc Insertion

Insert the disc from the rear of the player. Place it securely on the turntable. When the PLAY key is pressed, the clamper will go down and secure the disc. Playback will then begin.

3. Use All the Oscilloscope's Probes at 10:1.

4. Required adjustment after Replacement of major parts.

Adjustments	Replacements				
	Pickup	Actuator	Pre-pickup	Spindle motor	Tilt sensor
1. Tilt Sensor Adjustment	◎				◎
2. Coarse Grating Adjustment / TRK Balance Adjustment	◎	◎	◎		
3. Slider Shaft Horizontal Adjustment	◎	◎	◎	○	◎
4. Pickup Inclination Adjustment	◎	◎	◎	○	○
5. TRKG Error Best / Crosstalk Best Adjustment	◎	◎	◎	○	○
6. FOCS SUM Level Adjustment	◎	◎	◎	○	○
7. Tilt Sensor Inclination / Tilt Balance Adjustment	◎	◎	◎	○	◎
8. Spindle Motor Shaft Centering and Adjustment	◎	◎	◎	◎	
9. Fine Grating Adjustment / TRK Balance Adjustment	◎	◎	◎		
10. FCS Servo Loop Gain Adjustment	◎	◎	◎		
11. TRKG Servo Loop Gain Adjustment	◎	◎	◎		
12. RF Gain Adjustment	◎	◎	◎		

Note: Adjustments indicated by a ○ are made only when there is crosstalk.

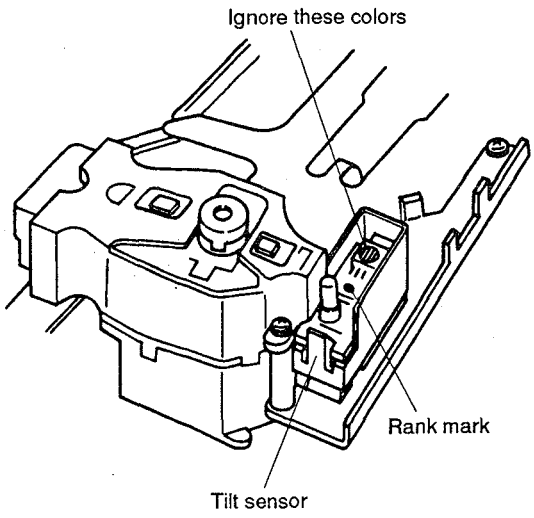
7.4.3 MECHANICAL ADJUSTMENTS

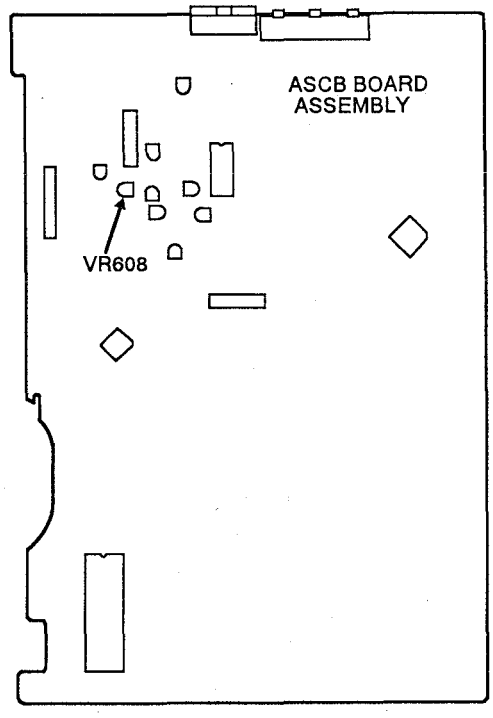
1. TILT SERVO GAIN ADJUSTMENT

- Purpose: Adjustment of the tilt servo's gain according to the tilt sensor's sensitivity rank.
- When not properly adjusted: Increased tilt servo hunting and increased crosstalk.

• Measuring instruments and jigs: • Measuring point: • Test disc and player mode	• Small screwdriver
• Positions to be adjusted	• VR608 (TILT GAIN)

Connection diagram





Adjustment Procedure

1. Use a screwdriver to adjust the angle of VR608 on the MAIN assembly according to the rank indicator's color.

Rank	Color	VR Angle
A	Red	Clockwise all the way
B	Clear	Mechanical center
C	Blue	Counterclockwise all the way

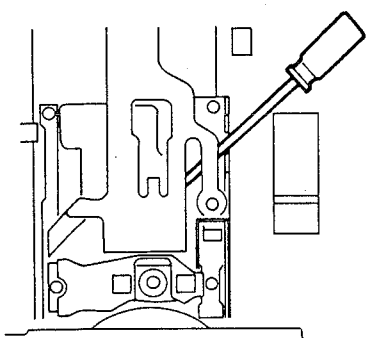
2. COARSE ADJUSTMENT OF GRATING AND TRK BALANCE

Mechanical Adjustment

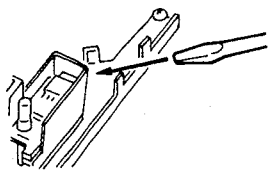
- Purpose: Adjustment of the grating angle to enable disc playback and trick playback.
- When not properly adjusted: The disc cannot be played back. Track skipping occurs.

• Measuring instruments and jigs:	• TV monitor • Small screwdriver • Oscilloscope
• Measuring point:	• CN401 - 9 (TRK ERR) and GND
• Test disc and player mode	• 8 - inch LD test disc (GGV1007) • Test Mode (Disc playback, TRK servo open, Tilt servo OFF)
• Positions to be adjusted	• Pickup assembly grating • VR602 (TRK BAL).

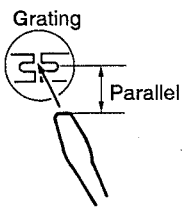
Connection diagram

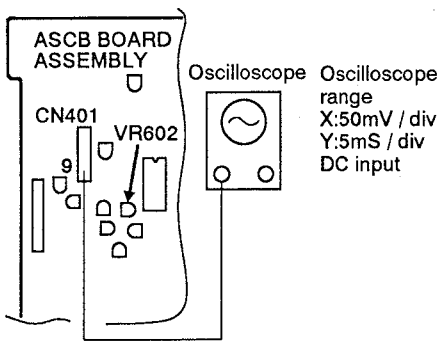


(Top view)
Screwdriver inserting direction



Insert the screwdriver to the slot horizontally for the base.





Oscilloscope range
X:50mV / div
Y:5mS / div
DC input

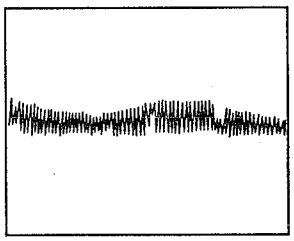


Fig.1 Null Point

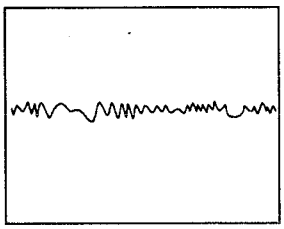


Fig.2 This is not the null point.

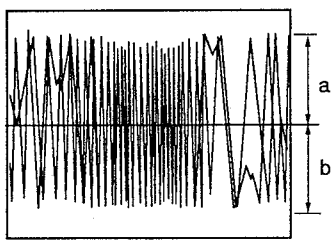


Fig.3 Maximum TRK error.

The positive and negative levels are equal.

Adjustment Procedure

Coarse grating adjustment

1. Insert the test disc and press the PLAY key.
2. Search for frame #15,000 or thereabouts.
3. Open the TRK servo.
4. Connect CN401 - 9 to the oscilloscope and observe the waveform.
5. Slide the tip of a small screwdriver through the guide and insert it horizontally into the grating adjustment slit. Adjust grating angle so that the waveform becomes small a its envelope is smooth. (This point is called null point.) (See Fig. 1 and Fig. 2.)
6. Turn the screwdriver counterclockwise untill the TRK waveform's amplitude reaches the first maximum from the null point.(See Fig. 3.)

TRK balance adjustment

1. Adjust VR602 so that the TRK error waveform amplitude's positive and negative level become equal. (See Fig.3.)
2. Close the TRK servo and check if the image on the TV screen is normal.

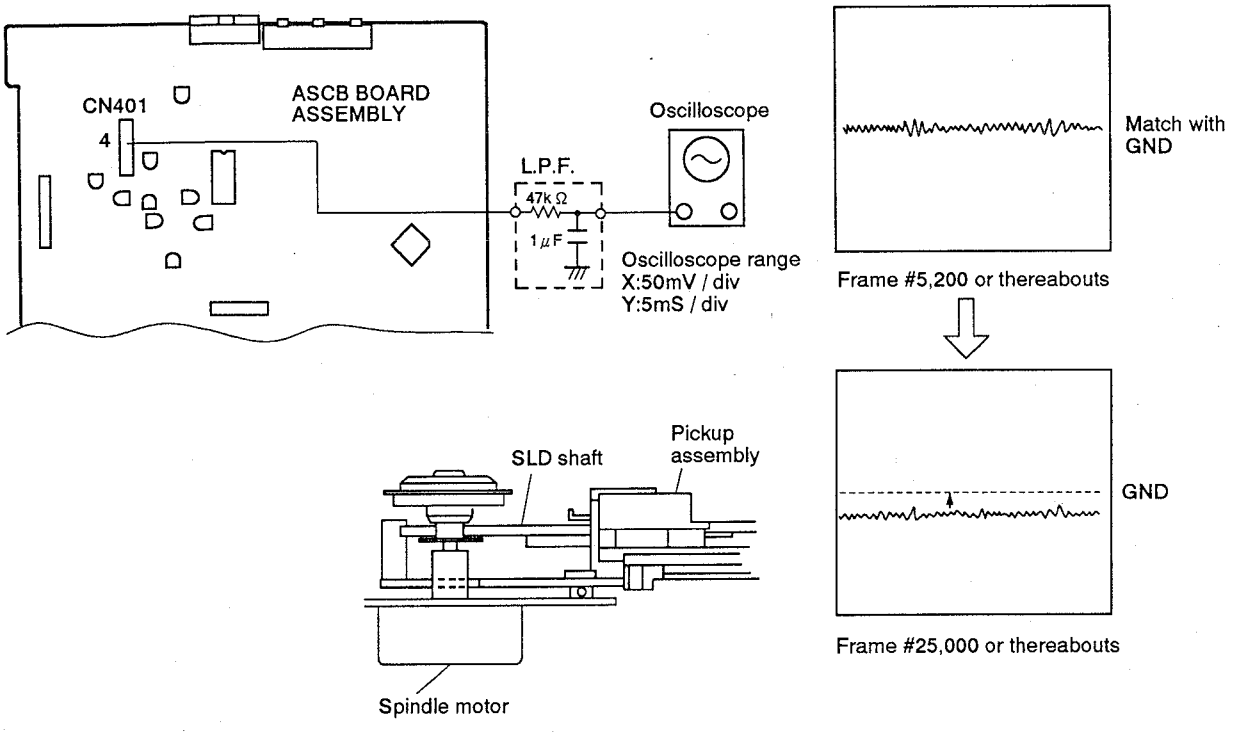
3. SLIDER SHFT HORIZONTAL ADJUSTMENT

Mechanical Adjustment

- Purpose: Setting the slider shaft horizontally to enable the pickup to move over the disc horizontally.
- When not properly adjusted: With a warped disc, the FCS servo does not function at the inner or outer periphery.

• Measuring instruments and jigs:	● Oscilloscope ● Low-pass filter (47k Ω + 1 μF)
• Measuring point:	● CN401 - 4 (FCS RTN) and GND
• Test disc and player mode	● 8 - inch LD test disc (GGV1007) ● Test mode (#5,200 still, TRK servo open, Tilt servo OFF)
• Positions to be adjusted	● Player SKIP key (In the test mode)

Connection diagram



Adjustment Procedure

1. Use the SCAN key to send the slider to frame #5,200 or thereabouts (tilt fulcrum) on the test disc. Open the TRK servo.
2. Connect the oscilloscope to CN401 - 4 through L.P.F. and match the center of the waveform with the oscilloscope's GND.
3. Search for frame #25,000 and use the SKIP key to adjust the center of the waveform to 0V ± 20mV.

Note : Regarding the test mode, see section "7.3 TEST MODE".

Note : This adjustment is critical in that it will affect the adjustments following.

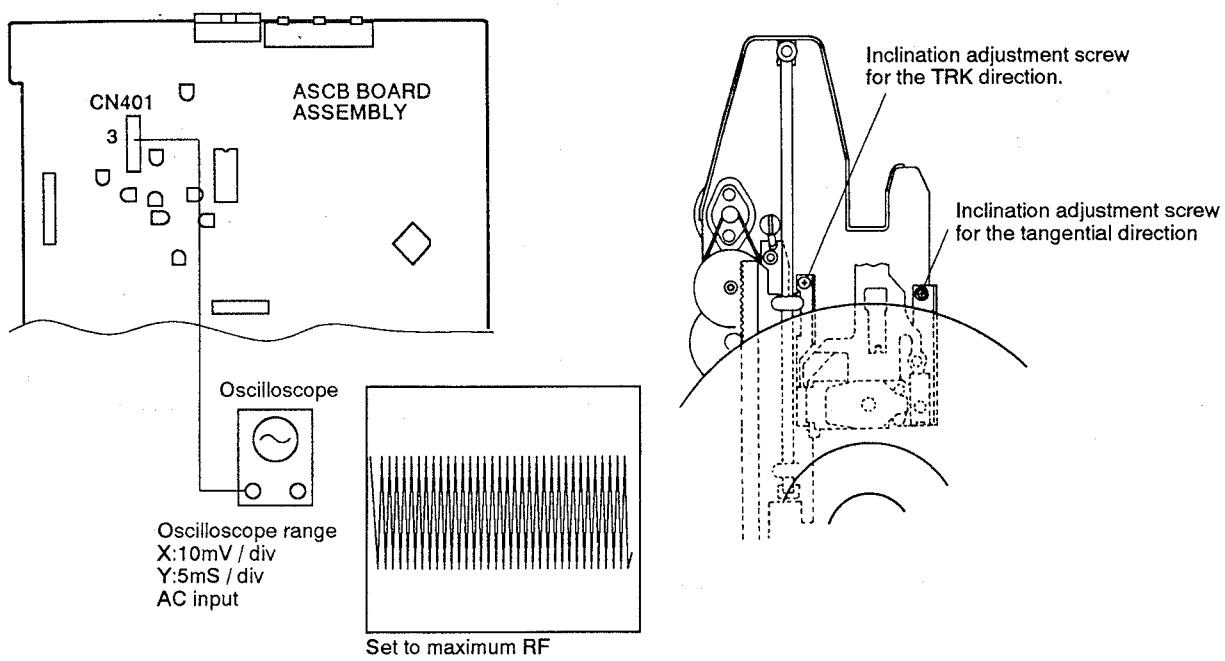
4. PICKUP INCLINATION ADJUSTMENT

Mechanical Adjustment

- Purpose: Adjustment of the pickup inclination to direct the laser beam vertically with respect to the disc.
- When not properly adjusted: Crosstalk will be generated.

• Measuring instruments and jigs:	• TV monitor • Oscilloscope
• Measuring point:	• CN401 - 3 (RF)
• Test disc and player mode	• 8 - inch LD test disc (GGV1007) • Test Mode (#2,251 still (Black screen))
• Positions to be adjusted	• Pickup assembly TRK / Tangential direction inclination adjustment screws

Connection diagram



Adjustment Procedure

1. Connect the oscilloscope to CN401 - 3.
2. Search for #2,251 and observe the RF waveform.
3. Adjust the pickup's TRK / Tangential direction inclination adjustment screw to maximize the waveform's amplitude.
4. Look at the TV screen and make sure there is no crosstalk.

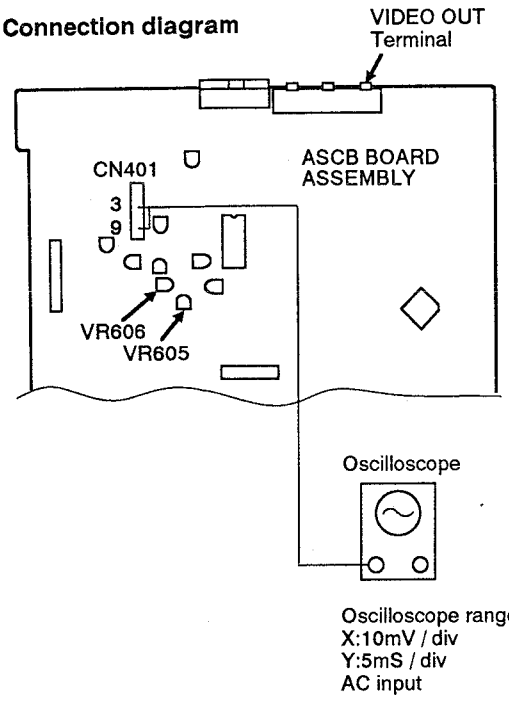
Note : If there is crosstalk on the TV screen even when the RF level is at the maximum, perform next steps .

5. TRKG ERROR MAX / CROSSTALK BEST ADJUSTMENT

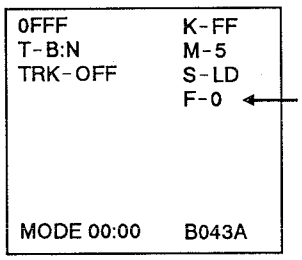
- Purpose: To set the FOCS servo to the optimum state when playing the normal playback and track jump (search).
- When not properly adjusted: Crosstalk will be generated.

• Measuring instruments and jigs: • Measuring point: • Test disc and player mode	● TV monitor ● Oscilloscope ● CN401-3 (RF) ● CN401-9 (TRK ERR) ● Player's VIDEO OUT terminal ● 8-inch LD test disc (GGV1007) ● Test Mode (TRK servo close / open, Tilt servo OFF)
• Positions to be adjusted	● VR605 (TE MAX) ● VR606 (CT BEST)

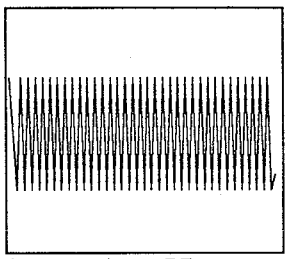
Connection diagram



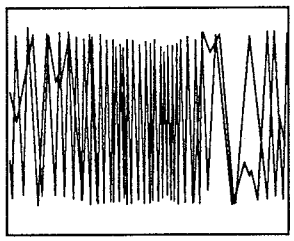
Oscilloscope range
X:10mV / div
Y:5mS / div
AC input



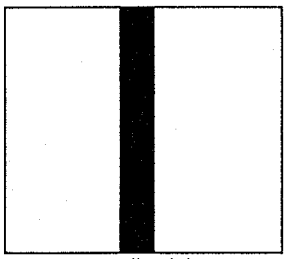
Screen display of test mode



Set to maximum RF amplitude at frame #2,701.



Maximize the TRKG error.



#475 crosstalk minimum

Adjustment Procedure

Note : Perform this adjustment when there is still noticeable crosstalk on the TV screen in section "4. Pickup Inclination Adjustment".

1. Connect the oscilloscope to CN401-9.
2. Open the TRK servo .
3. Confirm that the test mode screen display is F-0.
   If not, set the MULTI - SPEED REV button of the remote control unit to F-0.
4. Adjust VR605 so that the amplitude of the TRKG error waveform becomes maximum.
5. Close the TRKG servo.
6. Connect the oscilloscope to CN401-3 .
7. Press the MULTI - SPEED FWD button of the remote control unit to display "F-1" on the TV screen.
8. Search frame #2,251 and adjust VR606 so that the amplitude of the RF waveform becomes maximum.
9. Confirm that the crosstalk on the TV screen becomes minimum at frame #475.

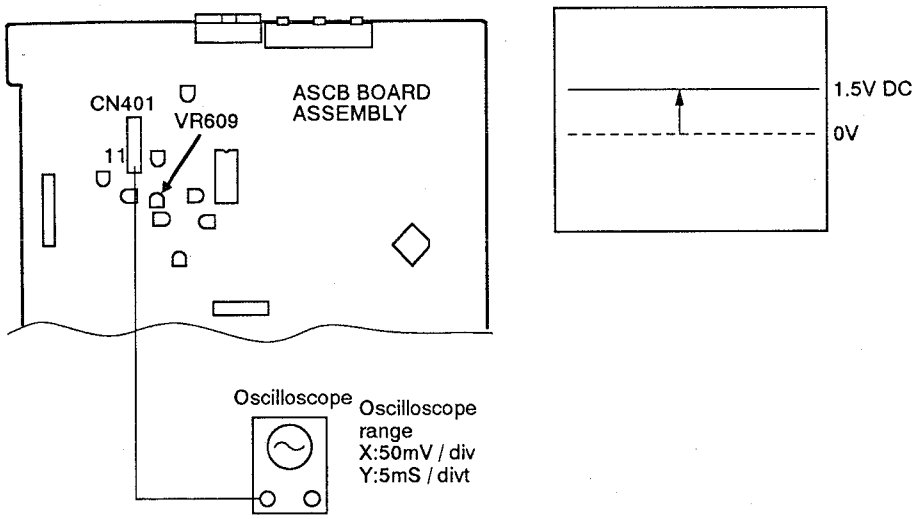
Note : After adjustment is complete, be sure to perform "6. FOCS SUM Level Adjustment".

6. FOCS SUM LEVEL ADJUSTMENT

- Purpose: To set the sum level (FCS SUM) of B1 – B4 to the optimum value for activating the FOCS servo.
- When not properly adjusted: Crosstalk will be generated.

• Measuring instruments and jigs:	• TV monitor • Oscilloscope
• Measuring point:	• CN401 - 11 (FCS SUM)
• Test disc and player mode	• 8 - inch LD test disc (GGV1007) • Normal play mode
• Positions to be adjusted	• VR609 (FCS SUM LEVEL)

Connection diagram



Adjustment Procedure

Note : Perform this adjustment after perform the "5. TRKG Error MAX / Crosstalk Best Adjustment".

1. Connect the oscilloscope to CN401 - 11.
2. Adjust VR609 so that the voltage becomes 1.5V DC.

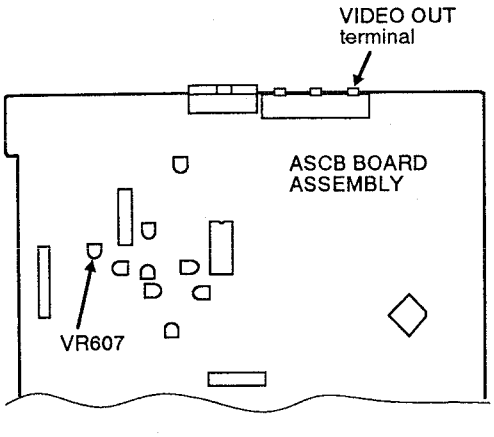
7. TILT SENSOR INCLINATION / TILT BALANCE ADJUSTMENT

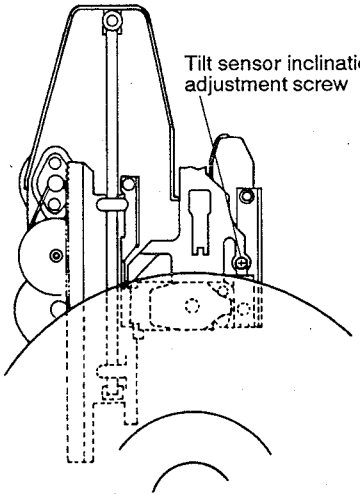
Mechanical Adjustment

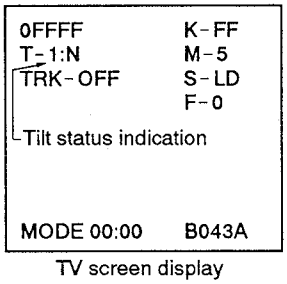
- Purpose: Adjustment of the tilt sensor's inclination to direct the tilt sensor's LED vertically with respect to the disc. Also, compensation for the sensitivity difference between the two sensors.
- When not properly adjusted: Crosstalk will be generated.

• Measuring instruments and jigs:	• TV monitor • Small Phillips screwdriver
• Measuring point:	• Player's VIDEO OUT terminal
• Test disc and player mode	• 8-inch LD test disc (GGV1007) • Test Mode (#16,200 still, TRK servo closed, Tilt servo OFF)
• Positions to be adjusted	• Tilt sensor inclination adjustment screw • VR607 (TILT BAL).

Connection diagram







TV screen display

Note: This display indicates the tilt error display's location. Other displays may differ slightly from the actual.

Adjustment Procedure

1. Search for frame #16,200 on the test disc.
2. Set VR607 to the mechanical center.
3. Adjust the tilt sensor inclination adjustment screw so that the tilt status display code is 6, 7, or 8 on the TV monitor.

Note : Turn the tilt sensor inclination adjustment screw clockwise more than 1/4 turn to complete the adjustment.

4. Search for frame #475.
5. Adjust VR607 so that the tilt error display becomes 7.

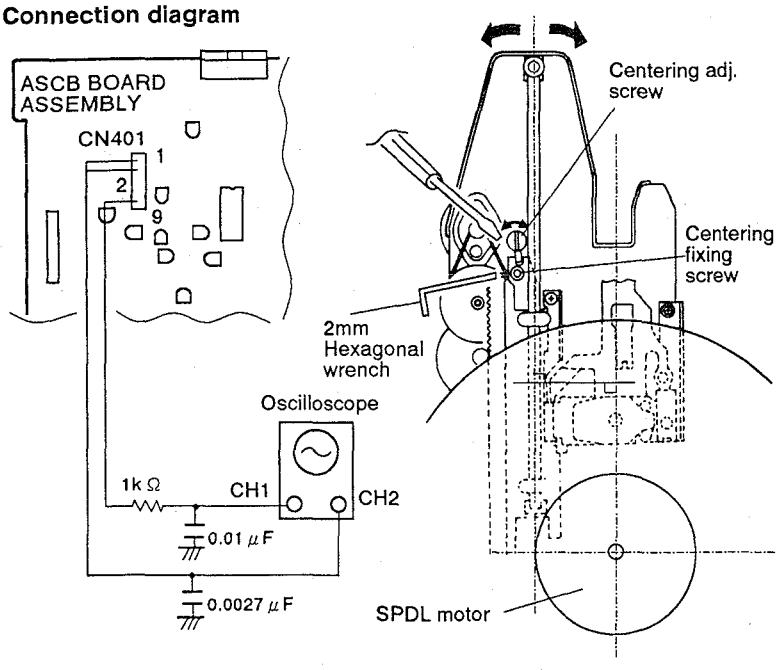
8. VERIFICATION AND ADJUSTMENT OF SPINDLE MOTOR CENTERING

Mechanical Adjustment

- Purpose: Adjustment of the mechanical assembly position to set the spindle motor over the center of the laser beam path when the pickup assembly moves toward the inner or outer periphery of the disc.
- When not properly adjusted: There is track skipping and the search time is long.

• Measuring instruments and jigs: • Measuring point: • Test disc and player mode	• Oscilloscope • Small screwdriver • L.P.F. (0.01 μF + 1k Ω), (0.0027 μF) • 2mm Hexagonal wrench • CH1 : CN401 - 9 (TRK ERR), CH2 : CN401 - 1, 2 (TRK A, B) • 8 - inch LD test disc (GGV1007) • Test Mode (#23,800 still, #3,000 still, TRK servo open, TILT servo ON)
• Positions to be adjusted	• Spindle motor centering adjustment lever

Connection diagram



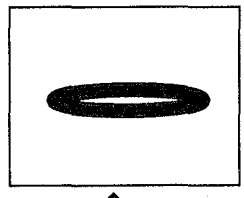


Fig. 1 Frame #23,800 lissajous

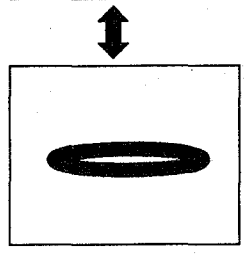


Fig. 2 Frame #3,000 lissajous

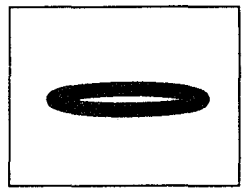


Fig. 3
CD inner periphery lissajous figure

X - Y mode
CH1: 50mV/div.
CH2: 5mV/div. AC

Adjustment Procedure

Note:Adjust the position of the slider shaft against the center line of the SPDL motor in this adjustment.

1. Set the oscilloscope to the X - Y mode and connect CH 1 (X input) and CH 2 (Y input) to CN401 - 9 and CN401 - 1, 2 respectively.
2. Search for frame #23,800 on the test disc and look at the lissajous figure.
3. Search for frame #3,000 and check if the bulge of the lissajous figure is the same as that of frame #23,800's lissajous figure.

Note : If the bulge of the lissajous waveform in step 3 differs for the inner and outer peripheries, do steps 4 to 6 .

4. Search for frame #23,800 and #3,000 alternately. Loosen a centering fixing screw and adjust the spindle motor centering adjustment screw so that the bulge of the lissajous figures become identical.
5. Change to a compact disc and playback the inner periphery. Check if the lissajous figure is the same as the one shown in Fig. 3.
6. If the compact disc's inner periphery lissajous figure differs from the one shown in Fig. 3, repeat steps 4 to 5.
7. Fix the centering fixing screw.

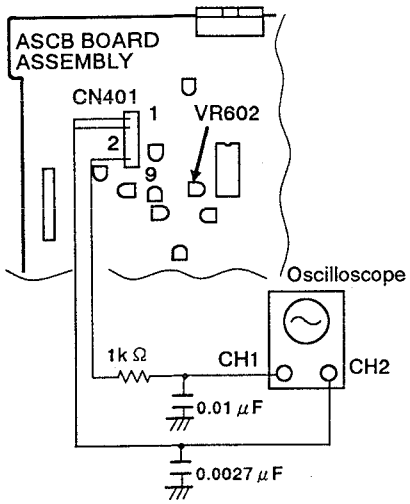
9. FINE ADJUSTMENT OF GRATING AND TRK BALANCE ADJUSTMENT

Mechanical Adjustment

- Purpose: Fine adjustment of the grating to direct the two TRK servo laser beams at the disc at the optimum position over the track.
- When not properly adjusted: There is track skipping.

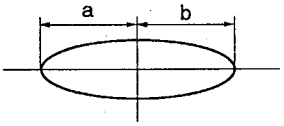
• Measuring instruments and jigs:	• Oscilloscope • Small screwdriver • L.P.F. (0.01 μF + 1k Ω), (0.0027 μF)
• Measuring point:	• CH1 (X) : CN401 - 9 (TRK ERR), CH2 (Y) : CN401 - 1, 2 (TRK A, B)
• Test disc and player mode	• 8 - inch LD test disc (GGV1007) • Test Mode (Play mode, TRK servo loop open, TILT servo ON)
• Positions to be adjusted	• Grating slit in the pickup assembly • VR602(TRK BAL)

Connection diagram



Set the probe to × 1 only for Y.

- Oscilloscope range:
  CH1 (X): 50mV / div.
  CH2 (Y): 5mV / div. X - Y mode



Frame #3,000
Lissajous figure
Y direction minimum, a=b.

Adjustment Procedure

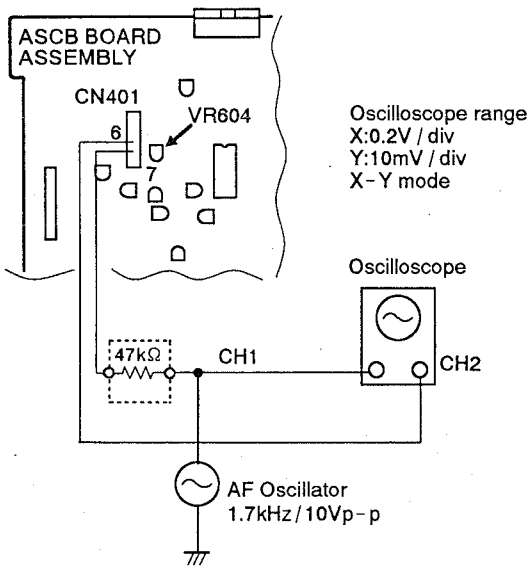
1. Playback the test disc at frame #3,000 (inner periphery) or thereabouts.
2. Set the oscilloscope to the X - Y mode, and connect CN401 - 9 (TRK ERR) and CN401 - 1, 2 (TRK A, B) to the X input and the Y input respectively. Then observe the lissajous figure.
3. Insert the small screwdriver tip into the grating adjustment slit. Fine adjust the grating to minimize the Y direction of the lissajous figure. (Refer to adjustment diagram on page 75.)
4. Check if "a " equals "b" for the lissajous figure. If "a" is not equal to "b", adjust VR602 (TRK BAL).
5. Close the TRK servo loop and check if the image on the TV screen is normal.

10. FCS SERVO LOOP GAIN ADJUSTMENT

- Purpose: Setting the FCS servo's loop gain to the optimum setting.
- When not properly adjusted: Playability is poor.

• Measuring instruments and jigs:	• Oscilloscope • AF oscillator (1.7kHz / 10Vp-p) • Resistor (47k Ω)
• Measuring point:	• CH1 (X) : CN401-7 (FCS IN), CH2 (Y) : CN401-6 (FCS ERR)
• Test disc and player mode	• 8-inch LD test disc (GGV1007) • Test Mode (Still mode, TRK servo loop close, TILT servo ON)
• Positions to be adjusted	• VR604 (FCS GAIN)

Connection diagram



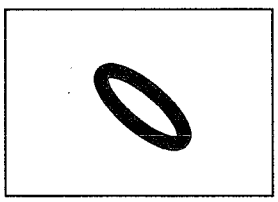


Fig. 1
Inadequate adjustment

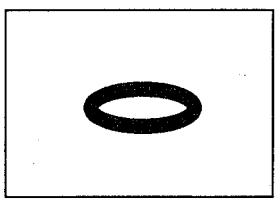


Fig. 2
After adjustment

Adjustment Procedure

1. Search for frame #15,000 on the test disc.
2. Connect the oscilloscope to CN401-6 and CN401-7 as shown above.
3. Set the oscilloscope to the X-Y mode and observe the lissajous figure.
4. Adjust VR604 so that the lissajous figure is symmetric with respect to the X and Y axes. (See Fig. 1 and 2.)

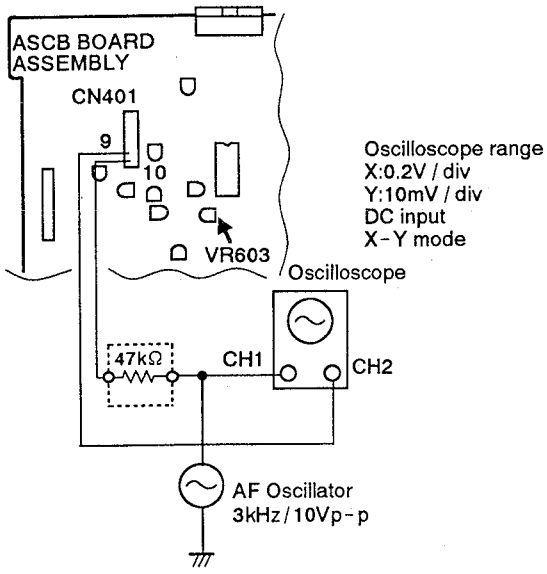
11. TRK SERVO LOOP ADJUSTMENT

Mechanical Adjustment

- Purpose: Optimum setting of the TRK servo's loop gain.
- When not properly adjusted: Playability is poor.

• Measuring instruments and jigs:	• Oscilloscope • AF oscillator (3.0kHz / 10Vp-p) • Resistor (47k Ω)
• Measuring point:	• CH1 (X) : CN401-10 (TRK IN), CH2 (Y) : CN401-9 (TRK ERR)
• Test disc and player mode	• 8-inch LD test disc (GGV1007) • Test Mode (Still mode at #15,000 (Black screen), TRK servo closed, TILT servo ON)
• Positions to be adjusted	• VR603 (TRK GAIN)

Connection diagram



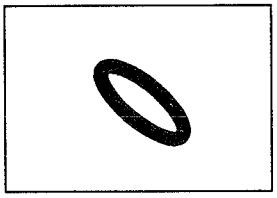


Fig. 1
Inadequate adjustment

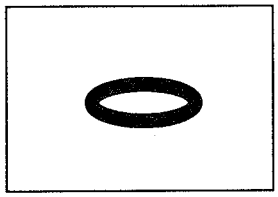


Fig. 2
After adjustment

Adjustment Procedure

1. Search for frame #15,000 on the test disc.
2. Connect the oscilloscope to CN401-10 (TRK IN) and CN401-9 (TRK ERR) as shown in the diagram below.
3. Set the oscilloscope to the X-Y mode and observe the lissajous figure.
4. Adjust VR603 to make the lissajous figure symmetrical with respect to the X and Y axes. (See Fig. 1 and 2.)

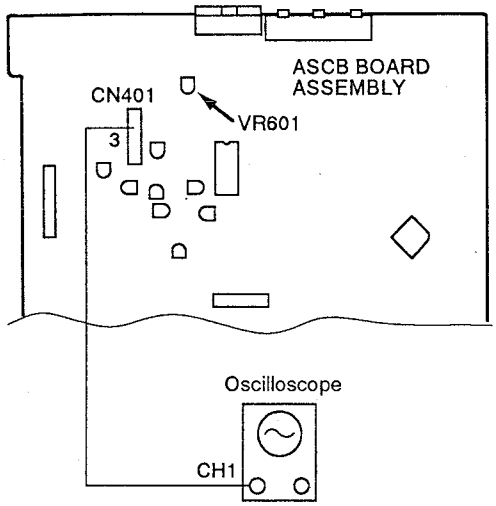
Note : If the waveform is not observable, either change the 47kΩ resitor to 33kΩ or increase the oscillator's output.

12. RF GAIN ADJUSTMENT

- Purpose: Optimum of the RF signal's amplitude.
- When not properly adjusted: There is prominent dropout. Scan and search operations are unstable.

• Measuring instruments and jigs:	• Oscilloscope
• Measuring point:	• CH1 : CN401-3 (RF)
• Test disc and player mode	• 8-inch LD test disc (GGV1007) • Test Mode (Still mode, TRK servo loop close, TILT servo ON)
• Positions to be adjusted	• VR601 (RF LEVEL)

Connection diagram



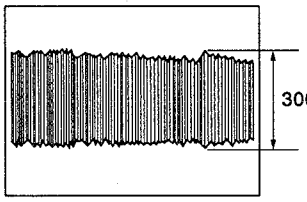


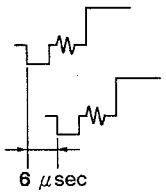
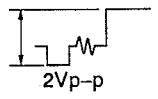
Fig. 1 RF signal

Oscilloscope range
5mV/div
2mS/div
AC mode

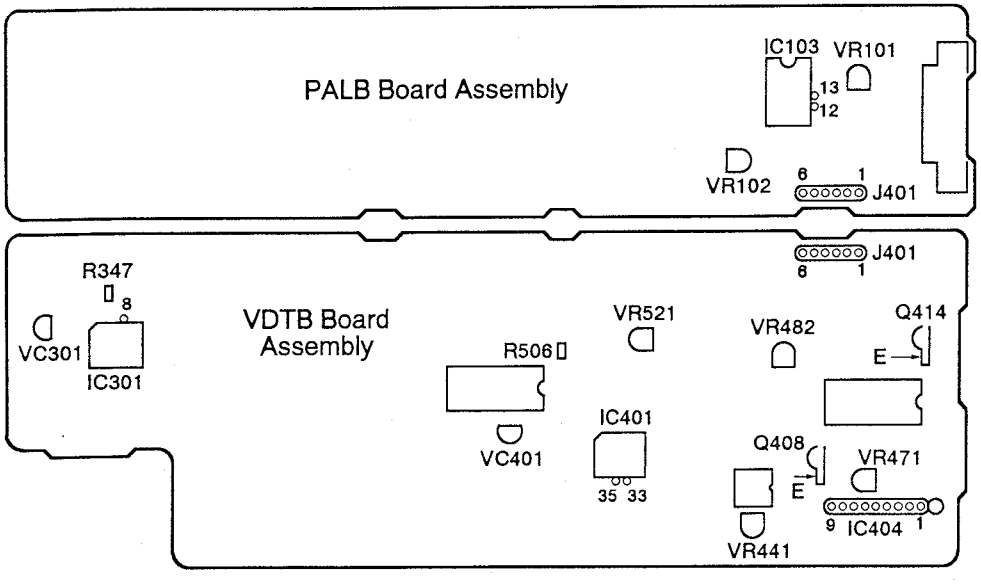
Adjustment Procedure

1. Search for frame #15,000 on the test disc.
2. Connect the oscilloscope to CN401-3 (RF) and observe the RF signal.
3. Adjust VR601 so that the RF signal's amplitude becomes 300mV ± 50mV. (See Fig. 1.)

7.4.4 ELECTRICAL ADJUSTMENTS

	Adjustment	Adjusting Point	Adjusting Specifications	Inspection Standard	Remarks
VDTB Board Assembly					
1	Sync-generator Clock Adjustment	VC401	Adjust VC401 for 17.734475MHz at the OPEN side of R506.	17.734475MHz ± 100Hz	
2	REF Clock Adjustment	VC301	Adjust for 3.5546875MHz at pin 8 (R347) of IC301. Or, adjust so that 1H of the PB video spans 10 seconds longer than that of the reference video signal.	3.5546875MHz ± 25Hz 15.6250kHz ± 0.1Hz	
3	VCO Center Frequency Adjustment	VR471	 Adjust VR471 so that the time lag between CCD input video (Q408 emitter) and the CCD output video (Q414 emitter) becomes 70 μsec (1H + 6 μsec). For this adjustment, connect pin 9 of IC404 to GND.	70 μsec ± 1.4 μsec	
4	Video Level Adjustment	VR482	 Adjust the 100 % white video level to 2 Vp-p at VIDEO OUT (J401, pin 6).	2Vp-p ± 5%	
5	1H Delay Video Level Adjustment	VR441	Adjust VR441 so that the level of the 1H-delay video at pin 33 of IC401 becomes the same as that of the main-line video pin 35.	Main-line video ± 3%	
6	VPS ERR Level Adjustment	VR521	While observing the magenta screen on a vector scope, minimize the jitter at VIDEO OUT (J401, pin 6).		
PALB Board Assembly					
7	MOD Video Level Adjustment	VR102	Adjust VR102 so that the luminance level of the MOD video at pin 13 of IC103 becomes the same as that of the through video at pin 12.	± 3%	
8	1H Delay S.C. Level Adjustment	VR101	While observing color bars in still mode on a vector scope, minimize the gain variation at VIDEO OUT (J401, pin 6).		

- **ADJUSTMENT POINTS**

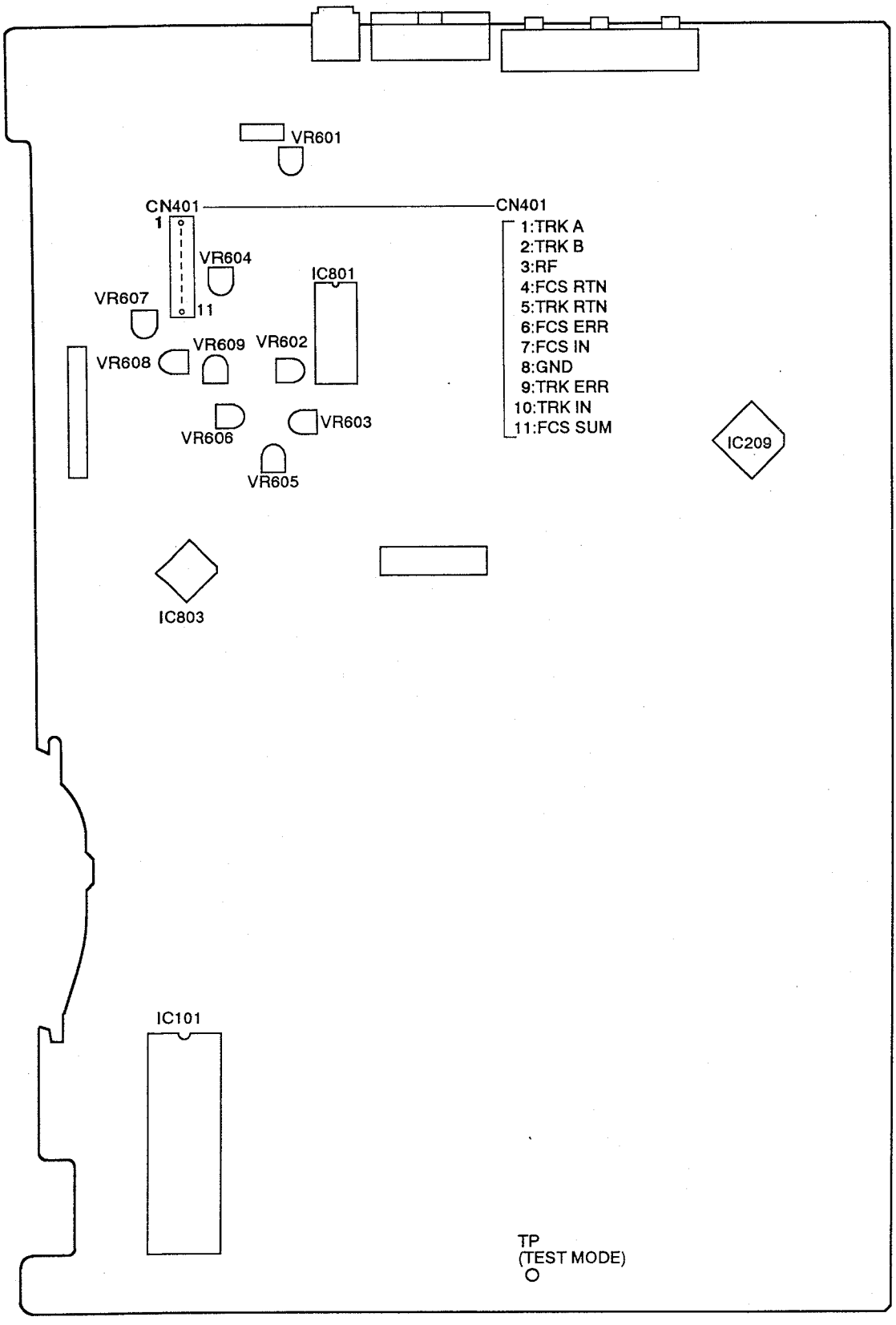


7. RÉGLAGES

7.1 SOMMAIRE DES RÉGLAGES SUR L'ENSEMBLE ASCB

	Réglage	Point de Réglage	Equipement de Mesure Point de Connexion	Etat du Lecteur	Spécifications de Réglage
1	Réglage de gain d'inclinaison	VR608	Aucun	Hors tension	• Position de GAIN VR d'inclinaison Rouge: Tourner vers la droite Clair : Centre Bleu: Tourner vers la gauche
2	Réglage approximatif de réfraction et de balance d'alignement (TRK)	Réfraction/VR602	CN401-9 (TRK ERR)	• Mode d'essai #15,000 Servo boucle TRK ouverte	• Point nul → Erreur TRK MAX • Ajuster VR602 pour que le niveau positif et négatif de l'amplitude de forme d'onde à l'erreur TRK soit égal.
3	Réglage horizontal d'axe coulissant	Touche SKIP du lecteur	CN401-4 (FCS RTN)	• Mode d'essai Servo boucle d'inclinaison coupée Servo boucle TRK ouverte #5,200	• Utiliser la touche SKIP pour ajuster 0V ± 20mV.
4	Réglage d'inclinaison de capteur	Vis de réglage TAN ensemble capteur/ inclinaison TRK	CN401-3(RF)	• Mode d'essai #2,251 fixe Servo boucle TRK fermée/ouverte Servo boucle d'inclinaison ouverte	• Amplitude de forme d'onde RF MAX (Vis de réglage TAN capteur/TRK) • Diaphonie minimisée
5	Réglage optimal d'erreur d'alignement/diaphonie	VR605 (TE BEST) VR606 (CT BEST)	CN401-9(TRK ERR) CN401-3(RF)	• Mode d'essai Servo boucle TRK fermée/ouverte Servo boucle d'inclinaison coupée	• RF MAX (VR606) Erreur TRK MAX (VR605)
6	Réglage de niveau FOCS SUM	VR609	CN401-11 (FCS SUM)	• Mode Lecture	• Ajuster VR609 pour que la tension soit 1,5 VDC.
7	Réglage inclinaison de capteur/balance d'inclinaison	Vis de réglage d'inclinaison de capteur VR607 (TILT BAL)	Moniteur TV Ecran en mode d'essai	• Mode d'essai #16,200 / #475 fixe Servo boucle TRK fermée Servo boucle d'inclinaison coupée	• Régler VR607 au centre. • Agir sur vis de réglage de sorte que le code d'affichage d'erreur soit 6,7 ou 8. • Ajuster VR607 de sorte que l'affichage d'erreur d'inclinaison soit 7.
8	Vérification et réglage du centrage de moteur de broche	Vis de réglage de centrage de moteur d'axe	CH1:CN401-9 (TRK ERR) CH2:CN401-1, 2 (TRK SUM) (mode X-Y)	• Mode d'essai #23,800 / #3,000 Servo boucle TRK ouverte Servo boucle d'inclinaison ON	• Agir sur la vis de réglage de centrage pour que les figures de Lissajous de #3,000 et #23,800 soient les mêmes.
9	Réglage fin de réfraction et de balance TRK	Réfraction / VR602	CH1:CN401-9 (TRK ERR) CH2:CN401-1, 2 (TRK SUM) (mode X-Y)	• Mode d'essai Servo boucle TRK ouverte Servo boucle d'inclinaison ON	• Minimiser la direction Y de la figure de Lissajous. • Les niveaux de la direction X des figures de Lissajous sont égaux.
10	Réglage de gain de boucle asservie FCS	VR604	CH1:CN401-7 (FCS IN) CH2:CN401-6 (FCS ERR) (mode X-Y)	• Mode d'essai #15,000 fixe Servo boucle TRK fermée Servo boucle d'inclinaison ON	• Ajuster VR604 de sorte que la figure de Lissajous soit symétrique sur les axes X et Y.
11	Réglage de gain de boucle asservie TRK	VR603	CH1:CN401-10 (TRK IN) CH2:CN401-9 (TRK ERR) (mode X-Y)	• Mode d'essai #15,000 fixe Servo boucle TRK fermée Servo boucle d'inclinaison ON	• Ajuster VR603 de sorte que la figure de Lissajous soit symétrique sur les axes X et Y.
12	Réglage de gain de fréquence radio (RF)	VR601	CN401-3(RF)	• #15,000 fixe	• Ajuster VR601 de sorte que le niveau RF devienne 300mV ± 50mV.

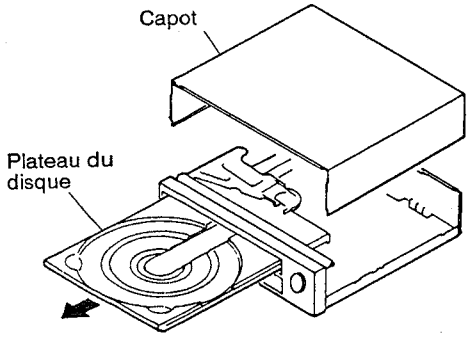
7.2 POINTS DE RÉGLAGE DE L'ENSEMBLE ASCB



7.3 MODE D'ESSAI

7.3.1 MODE D'ESSAI

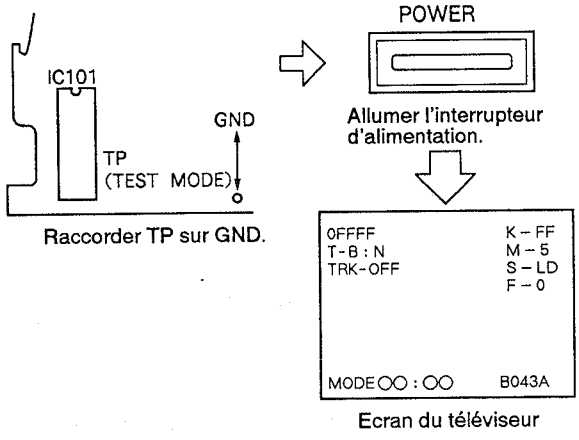
Le lecteur possède une fonction Mode d'essai, permettant au réparateur de vérifier l'état de l'appareil sur l'écran TV par exécution d'opérations sur les touches respectives.
De plus, comme l'asservissement TRK s'ouvre et se ferme facilement, le mode d'essai est particulièrement pratique pour les ajustements mécanismes.



7.3.2 PASSAGE EN MODE D'ESSAI

[Démarche]

1. Déposer le capot et le plateau du disque.
2. Raccorder TP (TEST MODE) de l'ensemble ASCB à GND (masse).
3. Allumer l'interrupteur d'alimentation.
4. Débrancher TP et GND (masse).



7.3.3 ANNULATION DU MODE D'ESSAI

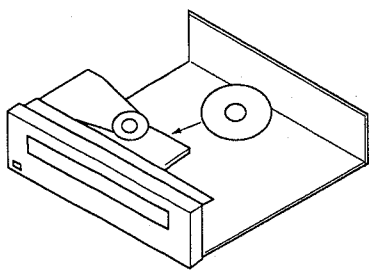
Couper l'interrupteur d'alimentation.

7.3.4 FONCTIONNEMENT DU LECTEUR EN MODE D'ESSAI

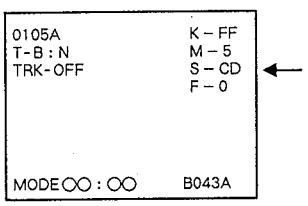
Faire fonctionner le lecteur en choisissant une fonction du mode d'essai par les touches du lecteur ou de la télécommande.

- Lecture d'un CD

① Placer un disque CD sur le plateau. (La bride est déjà relevée.)



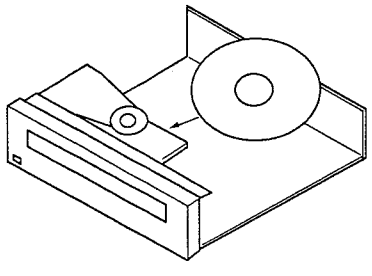
② Appuyer sur ◀◀ ou ▶▶ pour obtenir "S-CD" sur l'écran du téléviseur.



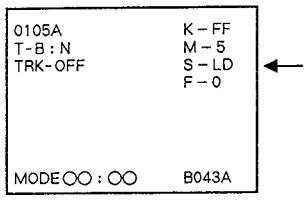
③ Immobiliser le disque en appuyant une fois sur la touche PLAY (▶). Appuyer ensuite deux fois sur la touche PLAY (▶) et le disque sera reproduit normalement.

- Lecture d'un LD

① Placer un disque LD sur le plateau. (La bride est déjà relevée.)



② Appuyer sur ◀◀ ou ▶▶ pour obtenir "S-LD" sur l'écran du téléviseur.

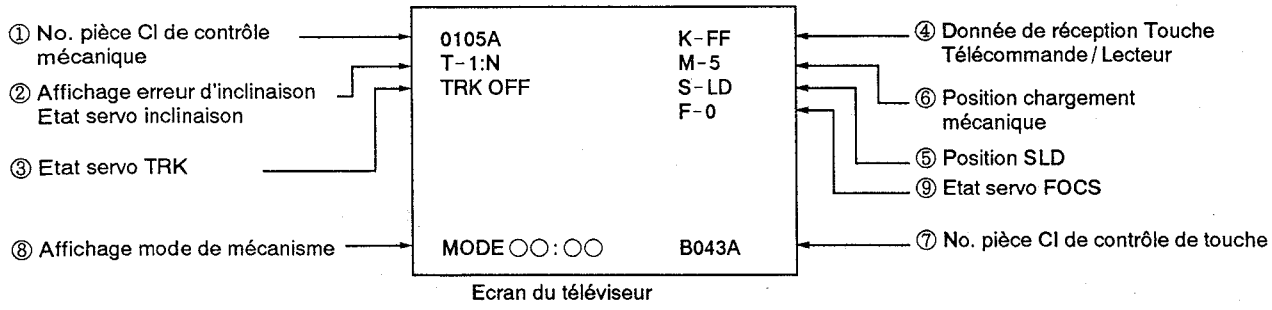


③ Immobiliser le disque en appuyant une fois sur la touche PLAY (▶). Appuyer ensuite deux fois sur la touche PLAY (▶) et le disque sera reproduit normalement.

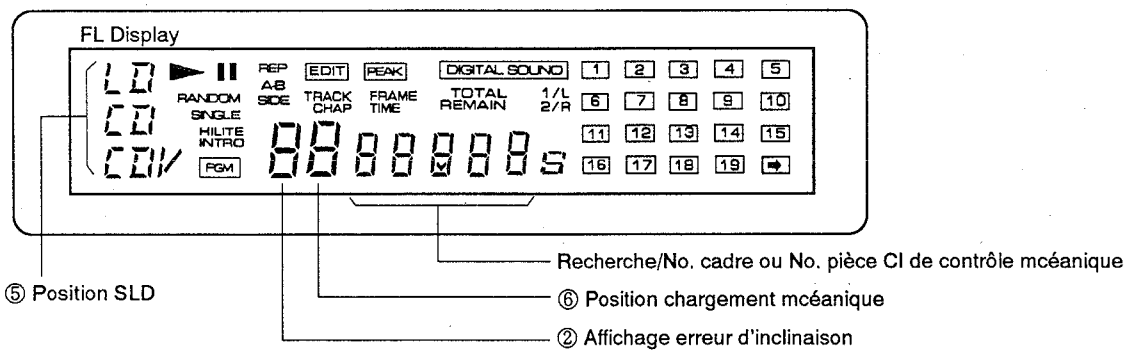
Tableau : Démarches en mode d'essai

Fonction	Etat du lecteur	Touche utilisée	Remarques
Ouverture plateau	Mode STOP	▲	
Fermeture plateau	Plateau ouvert	▲	
Arrêt	Mode PLAY	■	
Lecture	Placement de disque et plateau fermé.	▶	• Lancer la lecture avec servo TRK ouvert. • Lancer la lecture avec inclinaison au neutre. • Le type de disque (LD/CD/CDV) est déterminé quand la lecture commence à la position SLDR.
Servo TRK Ouverture/Fermeture	Mode PLAY	▶	• A chaque poussée sur la touche PLAY (▶), le servo TRK s'ouvre ou se ferme alternativement.
Fixe	Mode PLAY Servo TRK fermé.	II	• A chaque poussée sur la touche PAUSE (II), le lecteur passe alternativement entre les modes PLAY et STILL.
SLDR REV SCAN	Mode PLAY	◀◀	• Sens anti-horaire • Avec le servo TRK ouvert, le capteur peut être endommagé sur le SLD se déplace plus à l'intérieur que la zone d'amorce du disque. Ne pas laisser le SLD dépasser la zone d'amorce vers l'intérieur du disque.
SLDR FWD SCAN	Mode PLAY	▶▶	• Sens horaire • Avec le servo TRK ouvert, le capteur peut être endommagé sur le SLD se déplace plus à l'extérieur que la zone d'amorce du disque. Ne pas laisser le SLD dépasser la zone d'amorce vers l'extérieur du disque.
TILT Neutre	Interrupteur POWER allumé	EDIT	
TILT Servo ON	Mode PLAY	RANDOM PLAY	
TILT Moins TILT Servo OFF	Mode PLAY	I◀◀	• Maintenir les touches enfoncées.
TILT Plus TILT Servo OFF	Mode PLAY	▶▶I	• Maintenir les touches enfoncées.
Ecran d'affichage ON/OFF	Interrupteur POWER allumé	Touche PGM	
Recherche de cadre	Mode PLAY	Touche +10 ↓ Touche 0-9 ↓ ▶	• En mode PLAY, appuyer sur la touche +10 (Le lecteur se met en attente de l'entreé du No. de cadre.) • Se servir des touches numériques (0 – 9) pour entrer le numéro de cadre, puis appuyer sur la touche PLAY du lecteur pour la recherche. • A la fin de la recherche, le lecteur repasse au mode d'avant la recherche.
Moteur de chargement Rotation en sens horaire ou anti-horaire	Plateau ouvert	▶▶I I◀◀	• FWD: Déchargement • REV : Chargement
FOCS OFFSET (CT BEST) Vérification VR606	Mode PLAY (Servo TRK ouvert)	(Télécommande) MULTI-SPEED FWD →F-1 REV →F-0 (Lecteur) HILITE INTRO SCAN	• Pour vérification VR604 F-0 : Mode norma; • A la fermeture du TRK servo, VR606 (CT BEST) est actualisé. • A l'ouverture de TRK servo, VR605 (TE MAX) est actualité. F-1 : A l'ouverture de TRK servo, VR606 (CT BEST) est aussi actualisé.

7.3.5 ECRAN DU TÉLÉVISEUR ET AFFICHAGES EN MODE D'ESSAI



Ecran du téléviseur



① Le No. de piéce (ensemble ASCB) CI de contrôle mécanique sera affiché.

PD0105A1 → 0105A

② Etat servo inclinaison/Affichage erreur d'inclinaison

T-○:○○

- Etat servo d'inclinaison : N... Neutre
  ON... Servo ON
  OFF... Servo OFF
- Affichage erreur inclin : 0 Inclinaison −
  ↕ Neutre
  F Inclinaison +

③ Etat servo TRK

Ecran du téléviseur

TRK-○○○

└—ON...Servo TRK fermé

OFF...Servo TRK ouvert

④ Donneé de réception Touche Télécommande / Lecteur

Ecran du téléviseur

K-○○

└—Voir tableau ci-après.

Code	Fonction	Code	Fonction	Code	Fonction	Code	Fonction
00	0	20	F JOG0	40	(CHAP / TRK)	60	
01	1	21	F JOG1	41	(FRAM / TIM)	61	
02	2	22	F JOG2	42	(SEARCH)	62	
03	3	23	F JOG3	43	DISPLAY	63	
04	4	24	R JOG0	44	REPEAT B	64	
05	5	25	R JOG1	45	CLEAR	65	
06	6	26	R JOG2	46	SPEED –	66	
07	7	27	R JOG3	47	SPEED +	67	
08	8	28		48	REPEAT A	68	
09	9	29		49	(2 / R)	69	
0A	VOLUME +	2A		4A	(STEREO)	6A	
0B	VOLUME –	2B		4B	(1 / L)	6B	
0C	DGT / ANL	2C		4C	PROGRAM	6C	
0D		2D		4D		6D	PLAY /PAUSE
0E	CX ON/OFF	2E		4E		6E	STOP
0F	(TV / LDP)	2F		4F		6F	OPEN / CLOSE
10	(F-SCAN)	30		50	F-STEP	70	
11	(R-SCAN)	31		51		71	DIRECT CD
12		32		52	F-SKIP	72	PEAK
13	CHAP / FRME	33		53	R-SKIP	73	SINGLE
14		34		54	R-STEP	74	
15		35		55	R-MULT	75	
16	STOP / OPEN	36		56		76	
17	PLAY/SERCH	37	DGT LEVEL	57		77	
18	PAUSE	38		58	F-MULT	78	
19		39		59		79	
1A	(POW ON)	3A		5A	HILIT / INTR	7A	
1B	(POW OFF)	3B		5B		7B	
1C	POW ON/OFF	3C		5C		7C	
1D	EDIT	3D		5D		7D	
1E	AUDIO	3E		5E	RNDM (TEST)	7E	
1F	+10	3F		5F	(ESC)	7F	

⑤ Position SLD

Ecran du téléviseur

S-○○○

└—IN ... CD intérieur SW ON

CD ... Zone active de CD

CDV ... Zone active de CDV

LD ... Zone active de LD

⑥ Position de chargement mécanique

Ecran du téléviseur

M-○

└—0 ... Plateau ouvert

1 ... Chargement

2 ... Attente

3 ... Verrouillé

5 ... Inclinason moin

6 ... Inclinaison neutre (un côté)

7 ... Inclinaison plus

8 ... Limite d'inclinaison

9 ... Côté B verrouillé (deux côtés)

⑦ Etat VR décalage de mise au point

Ecran du téléviseur

F-○

└— 0 ... Mode normal

•A la fermeture de servo TRK, VR606 (CT BEST) est actualisé.

•A l'ouverture de servo TRK, VR605 (TE MAX) est actualisé.

1 ... A l'ouverture de servo TRK, VR606 (CT BEST) est aussi actualisé.

7.4 RÉGLAGES

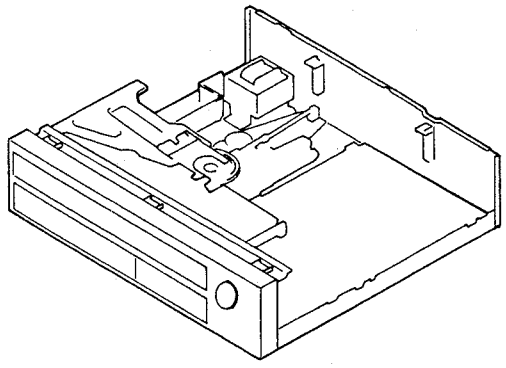
7.4.1 Instruments de Réglage

- Petit tournevis (tige de 7 cm)
- Petit tournevis cruciforme (tige 15 cm)
- Filtre passe-bas (47 kohms + 1 μF/BP)
- Oscilloscope double faisceau (avec retard)
- Oscillateur audiofréquence (AF)
- Compteur de fréquence
- Disque d'essai LD (GGV1007)
- Disque LDD 8 pouces
- Disque CDV
- Pince coupe-circuit
- Moniteur TV
- Résistance (1 kohms, 47 kohms)
- Condensateur (0,01 μF, 0,0027 μF)
- Télécommande
- Clé hexagonale 2 mm

7.4.2 Préparatifs et Remarques sur les Réglages

1. Préparation du Lecteur

Avant d'effectuer un réglage, déposer le capot et le plateau du disque; placer ensuite le lecteur à l'horizontale sur une surface plate.



2. Insertion du disque

Insérer le disque par l'arrière du lecteur et le poser correctement sur le plateau. Par une poussée sur la touche PLAY, la bride s'abaisse pour immobiliser le disque et la lecture commence.

3. Utiliser toutes les sondes d'oscilloscope à 10:1.

4. Réglage requis après remplacement des pièces principales

Réglages	Remplacements				
	Capteur	Actuateur	Pré-capteur	Moteur d'axe	Capteur d'inclinaison
1. Réglage capteur d'inclinaison	◎				◎
2. Réglage approx. de réfraction / Réglage balance TRK	◎	◎	◎		
3. Réglage horizontal d'axe coulissant	◎	◎	◎	○	◎
4. Réglage d'inclinaison de capteur	◎	◎	◎	○	○
5. Réglage Erreur TRKG / Diaphonie optimal	◎	◎	◎	○	○
6. Réglage de niveau FOCS SUM	◎	◎	◎	○	○
7. Réglage inclinaison de capteur / balance d'inclinaison	◎	◎	◎	○	◎
8. Vérification et réglage de centrage de moteur de broche	◎	◎	◎	◎	
9. Réglage fin de réfraction / Balance TRK	◎	◎	◎		
10. Réglage de gain de boucle FCS	◎	◎	◎		
11. Réglage de gain de boucle TRKG	◎	◎	◎		
12. Réglage de gain RF	◎	◎	◎		

Remarque : Les réglages marqués d'un (○) sont effectués uniquement en cas de diaphonie.

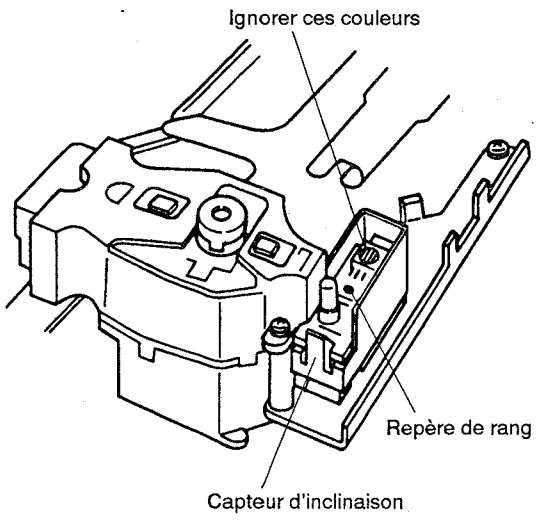
7.4.3 RÉGLAGES MÉCANIQUES

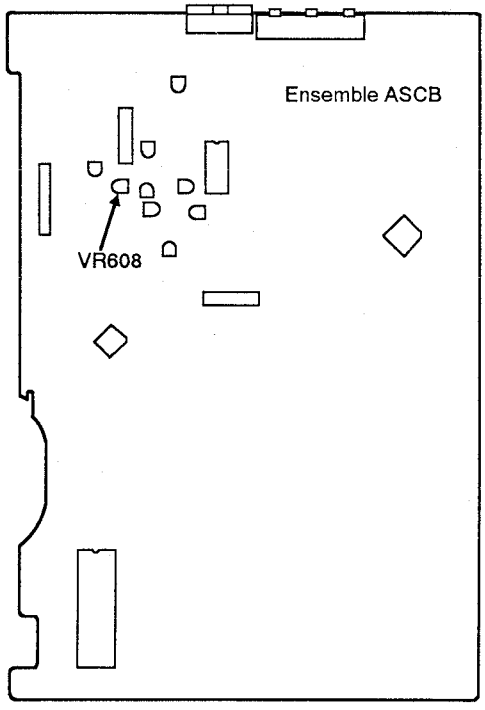
1. RÉGLAGE DE GAIN D'INCLINAISON

- Objet : Ajuster le gain d'inclinaison en fonction du rang de sensibilité du capteur d'inclinaison.
- En cas de mauvais réglage : Augmentation des oscillations d'inclinaison et de la diaphonie.

• Instruments de mesure et calibres: • Point de mesure: • Disque d'essai et mode du lecteur:	• Petit tournevis
• Positions à ajuster:	• VR608 (TILT GAIN)

Schéma de connexion





Procédure de Réglage

1. Se servir du tournevis pour ajuster l'angle de VR608 sur l'ensemble ASCB en fonction de la couleur de l'indicateur de rang.

Rang	Couleur	Angle VR
A	Rouge	A fond dans le sens horaire
B	Clair	Centre mécanique
C	Bleu	A fond dans le sens anti-horaire

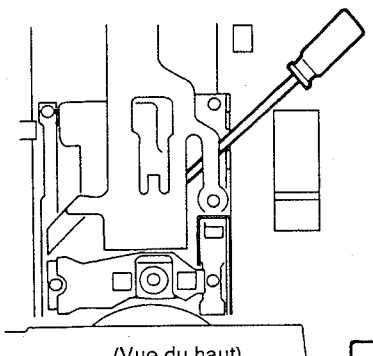
2. RÉGLAGE APPROXIMATIF DE RÉFRACTION / RÉGLAGE BALANCE TRK

Réglages Mécaniques

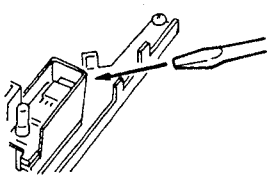
- Objet : Réglage de l'angle de réfraction pour permettre la lecture du disque et la lecture fictive.
- En cas de mauvais réglage : La lecture du disque est impossible. Saut de piste.

• Instruments de mesure et calibres:	● Moniteur TV ● Petit tournevis ● Oscilloscope
• Point de mesure:	● CN401 - 9 (TRK ERR) et GND
• Disque d'essai et mode du lecteur:	● Disque d'essai LD de 8 pouces (GGV1007) ● Mode d'essai (Lecture de disque, Servo TRK ouvert, Servo inclinaison OFF)
• Positions à ajuster:	● Réfraction d'ensemble de capteur ● VR602 (TRK BAL).

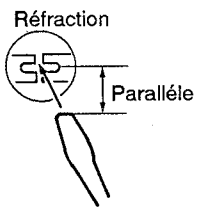
Schéma de connexion

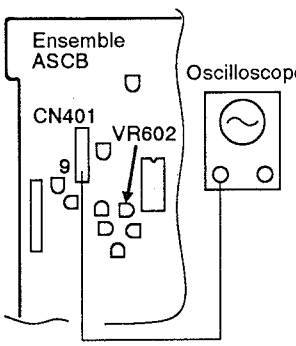


(Vue du haut)
Sens d'insertion du tournevis



Insérer le tournevis dans la fente horizontalement pour la base.





Plage d'oscilloscope
X:50mV / div
Y:5mS / div
Entrée courant continu

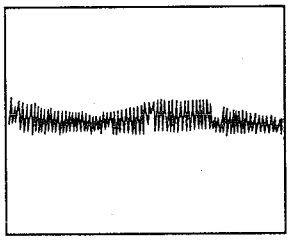


Fig.1 Point nul

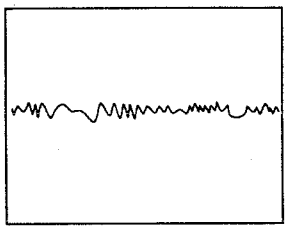


Fig.2 Ceci n'est pas le point nul.

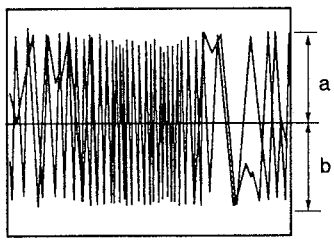


Fig.3 Erreur TRK maximale

Les niveaux positif et négatif sont égaux.

Procédure de réglage

Réglage approximatif de réfraction

1. Installer le disque d'essai et appuyer sur la touche PLAY.
2. Rechercher le cadre #15,000 environ.
3. Ouvrir la boucle servo TRK (alignement).
4. Raccorder CN401 - 9 à l'oscilloscope et observer la forme d'onde.
5. Glisser le bout d'un petit tournevis par le guide et l'insérer horizontalement dans la fente de réglage de rféraction. Ajuster l'angle de réfraction de sorte que la forme d'onde soit petite et que l'enveloppe soit douce. (Ce point est appelé le point nul.) (Voir Fig.1 et Fig.2.)
6. Tourner le tournevis dans le sens anti-horaire jusqu' à ce que l'amplitude de la forme d'onde atteigne le premier maximum à partir du point nul. (Voir Fig.3)

Réglage de balance TRK (alignement)

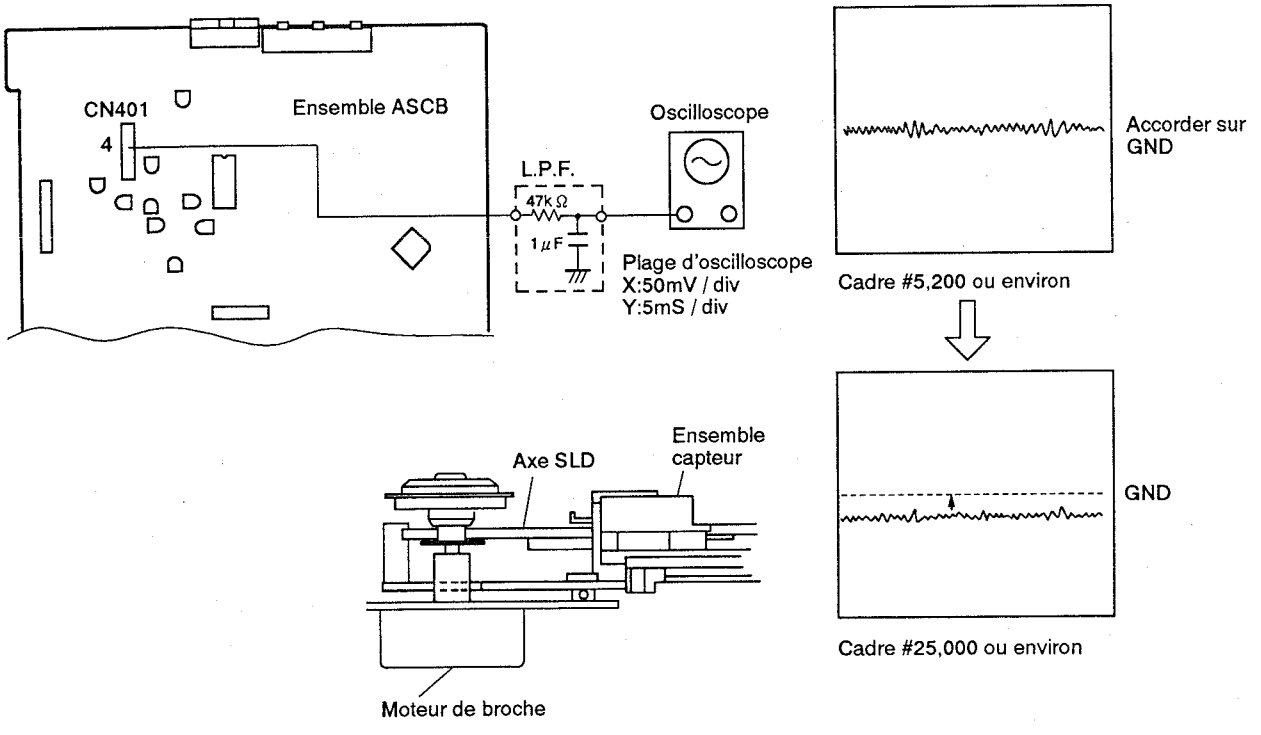
1. Ajuster VR602 de sorte uqe les niveaux positif et négatif de l'amplitude de forme d'onde d'erreur TRK soient égaux. (Voir Fig.3.)
2. Fermer la boucle servo TRK et vérifier si l'image est normale sur l'écran du téléviseur.

3. RÉGLAGE HORIZONTAL D'AXE COULISSANT

- Objet : Rendre le disque et l'axe coulissant parallèles de sorte que le capteur puisse se déplacer horizontalement sur le disque.
- En cas de mauvais réglage : Avec un disque voilé, l'asservissement FCS ne fonctionne pas au centre et à la périphérie du disque.

• Instruments de mesure et calibres:	• Oscilloscope • Filtre passe-bas (47k Ω + 1 μF)
• Point de mesure:	• CN401 - 4 (FCS RTN) et GND
• Disque d'essai et mode du lecteur:	• Disque d'essai LD de 8 pouces (GGV1007) • Mode d'essai (image fixe sur #5,200, servo TRK ouvert, Servo d'inclinaison OFF)
• Positions à ajuster:	• Touche SKIP du lecteur (en mode d'essai)

Schéma de connexion



Procédure de réglage

1. Utiliser la touche SCAN pour déplacer le coulisseau au cadre #5,200 ou environ (support d'inclinaison) sur le disque d'essai. Ouvrir le servo TRK.
2. Raccorder l'oscilloscope sur CN401 - 4 via L.P.F. et faire correspondre le centre de la forme d'onde avec la masse de l'oscilloscope.
3. Rechercher le cadre #25,000 et se servir de la touche SKIP pour ajuster le centre de la forme d'onde sur 0V ± 20 mV.

Remarque:En ce qui concerne le mode d'essai, voir la section "7.3 MODE D'ESSAI".

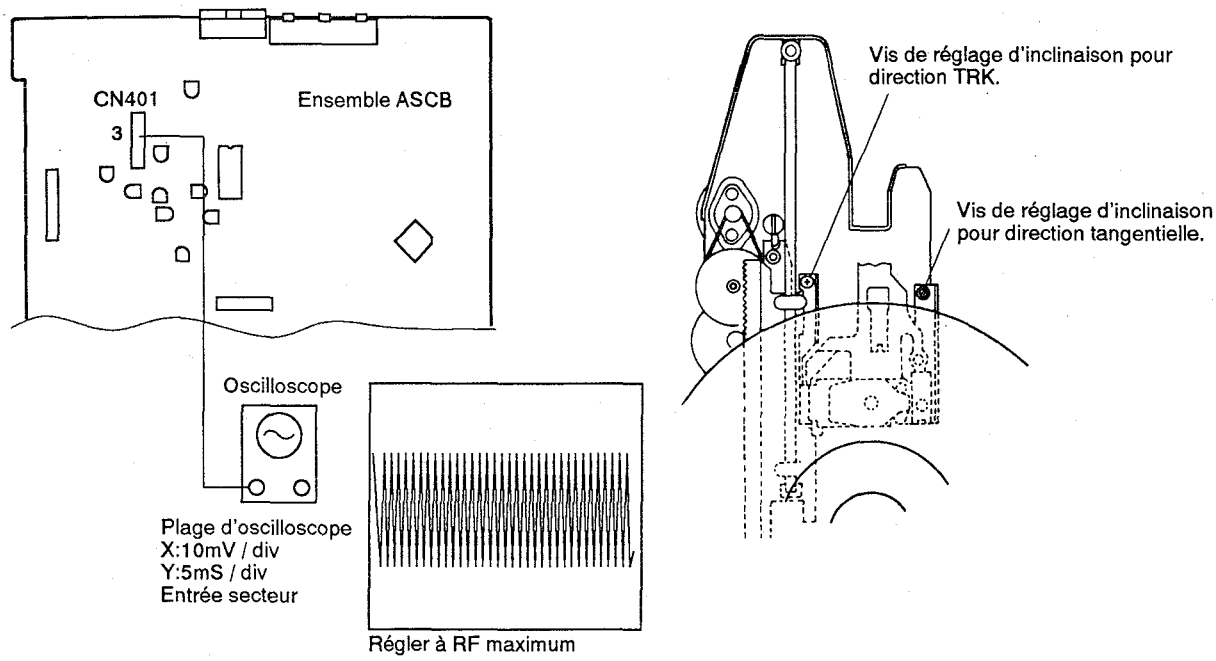
Remarque : Ce réglage est critique car il affectera les réglages ultréieurs.

4. RÉGLAGE D'INCLINAISON DE CAPTEUR

- Objet : Régler l'inclinaison du capteur de sorte que le faisceau laser soit dirigé verticalement par rapport au disque.
- En cas de mauvais réglage : Production de diaphonie.

• Instruments de mesure et calibres:	• moniteur TV • Oscilloscope
• Point de mesure:	• CN401 - 3 (RF)
• Disque d'essai et mode du lecteur:	• Disque d'essai LD de 8 pouces (GGV1007) • Mode d'essai (Image fixe au #2,251, écran noir)
• Positions à ajuster:	• Alignement d'ensemble capteur / Vis de réglage d'inclinaison tangentielle

Schéma de connexion



Procédure de réglage

1. Raccorder l'oscilloscope sur CN401 - 3.
2. Rechercher le cadre #2,251 et observer la forme d'onde RF.
3. Agir sur la vis de réglage TRK du capteur/inclinaison en direction tangentielle pour maximaliser l'amplitude de la forme d'onde.
4. Observer l'écran du téléviseur et confirmer qu'il n'y a pas de diaphonie.

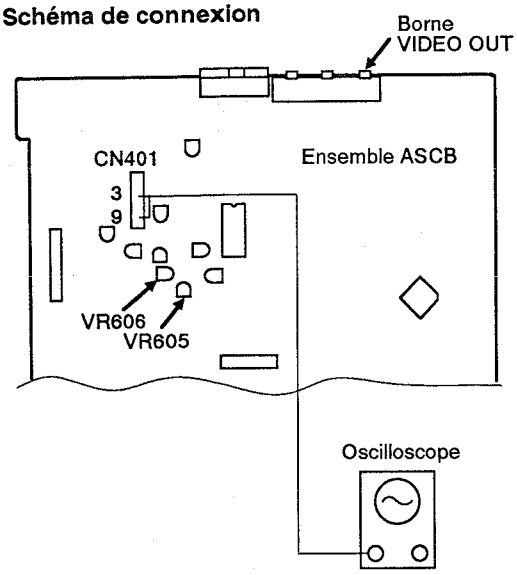
Remarque : Si une diaphonie est constatée sur l'écran même quand le niveau RF est au maximum, effectuer les étapes suivantes.

5. RÉGLAGE ERREUR D'ALIGNEMENT/DIAPHONIE OPTIMALE

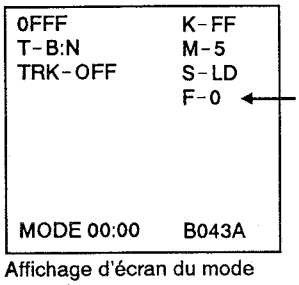
- Objet : Ajuster la mise au point à l'état optimal à la lecture normale et lors du saut de plage (recherche).
- En cas de mauvais réglage : Production de diaphonie.

• Instruments de mesure et calibres:	● Moniteur TV ● Oscilloscope
• Point de mesure:	● CN401-3 (RF) ● CN401-9 (TRK ERR) ● Borne VIDEO OUT du lecteur
• Disque d'essai et mode du lecteur:	● Disque d'essai LD de 8 pouces (GGV1007) ● Mode d'essai (ouverture/fermeture servo TRK, Servo d'inclinaison OFF)
• Positions à ajuster:	● VR605 (TE MAX) ● VR606 (CT BEST)

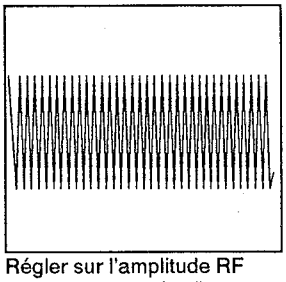
Schéma de connexion



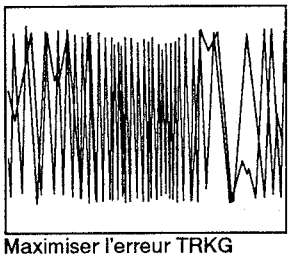
Plage d'oscilloscope
X:10mV / div
Y:5mS / div
Entrée secteur



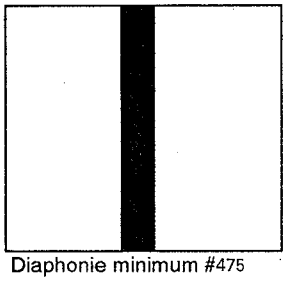
Affichage d'écran du mode d'essai



Régler sur l'amplitude RF maximum au cadre #2,701.



Maximiser l'erreur TRKG (alignement).



Diaphonie minimum #475

Procdéure de réglage

Remarque : Effectuer ce réglage si une diaphonie considérable est constatée sur l'écran à la section 4 "Réglage d'inclinaison de capteur".

1. Raccorder l'oscilloscope sur CN401-9.
2. Ouvrir le servo TRK.
3. Confirmer que l'affichage d'écran du mode d'essai est F-0. Dans la négative, régler la touche MULTI-SPEED REV de la télécommande sur F-0.
4. Ajuster VR605 de sorte que l'amplitude de la forme d'onde d'erreur TRKG devienne maximale.
5. Refermer le servo TRK.
6. Raccorder l'oscilloscope sur CN401-3.
7. Appuyer sur la touche MULTI - SPEED FWD de la télécommande pour afficher "F-1" sur l'écran du téléviseur.
8. Rechercher le cadre #2,251 et ajuster VR606 de sorte que l'amplitude de la forme d'onde RF devienne maximale.
9. Confirmer que la diaphonie sur l'écran du téléviseur devient minimale au cadre #475.

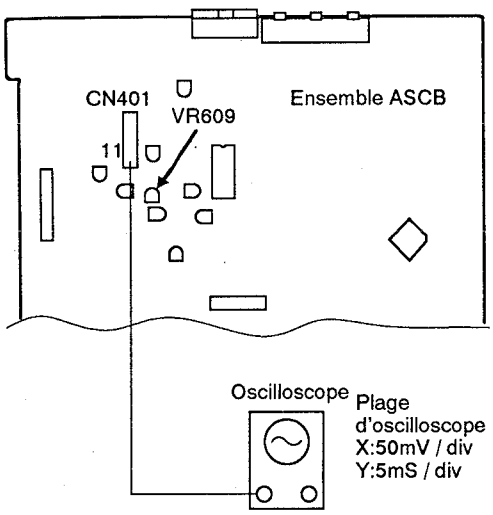
Remarque : Une fois le réglage terminé, veiller à effectuer "6. Réglage de niveau FOCS SUM".

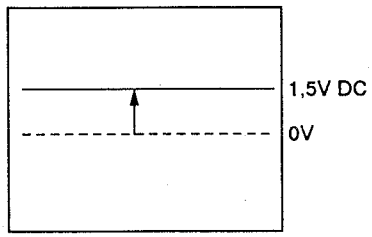
6. RÉGLAGE DE NIVEAU FOCS SUM

- Objet : Régler le niveau de la somme (FCS SUM) de B1– B4 à la valeur optimale pour actualiser le servo FOCS (mise au point).
- En cas de mauvais réglage : Production de diaphonie.

• Instruments de mesure et calibres:	• Moniteur TV • Oscilloscope
• Point de mesure:	• CN401 - 11(FCS SUM)
• Disque d'essai et mode du lecteur:	• Disque d'essai LD de 8 pouces (GGV1007) • Mode de lecture normale
• Positions à ajuster:	• VR609(FCS SUM LEVEL)

Schéma de connexion





Procdéure de réglage

Remarque : Effectuer ce réglage après avoir exécuté "5. Réglage Erreur d'alignement / Diaphonie optimale".

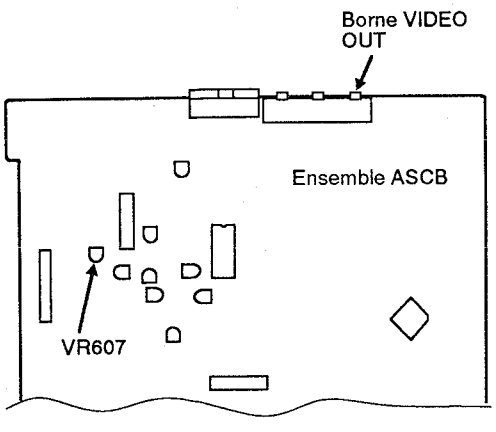
1. Raccorder l'oscilloscope sur CN401 - 11.
2. Ajuster VR609 de sorte que la tension deviennt 1,5 V CC.

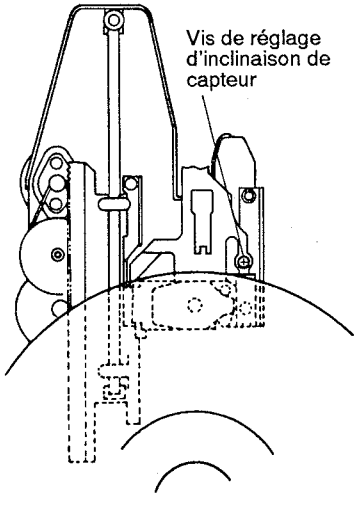
7. RÉGLAGE INCLINAISON DE CAPTEUR/BALANCE D'INCLINAISON

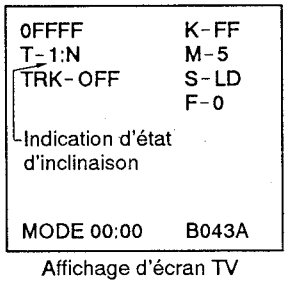
- Objet : Régler l'inclinaison du capteur afin de diriger verticalement la diode LED du capteur d'inclinaison par rapport au disque. Egalement, compenser la différence de sensibilité entre les deux capteurs.
- En cas de mauvais réglage : Production de diaphonie

• Instruments de mesure et calibres:	• Moniteur TV • Petit tournevis cruciforme
• Point de mesure:	• Borne VIDEO OUT du lecteur
• Disque d'essai et mode du lecteur:	• Disque d'essai LD de 8 pouces(GGV1007) • Mode d'essai (image fixe sur #16,200, servo TRK fermé servo d'inclinaison OFF)
• Positions à ajuster:	• Vis de réglage d'inclinaison de capteur • VR607 (TILT BAL).

Schéma de connexion







Affichage d'écran TV

Remarque:
L'affichage indique l'endroit d'affichage de l'erreur d'inclinaison. Les autres affichages peuvent différer légèrement de l'affichage réel.

Procédure de réglage

1. Rechercher le cadre #16,200 sur le disque d'essai.
2. Régler VR607 au centre mécanique.
3. Ajuster la vis de réglage d'inclinaison de capteur de sorte que le code d'affichage d'état soit 6, 7 ou 8 sur le moniteur TV.

Remarque: Tourner la vis de réglage d'inclinaison de capteur dans le sens horaire plus d'un-quart de tour pour terminer le réglage.

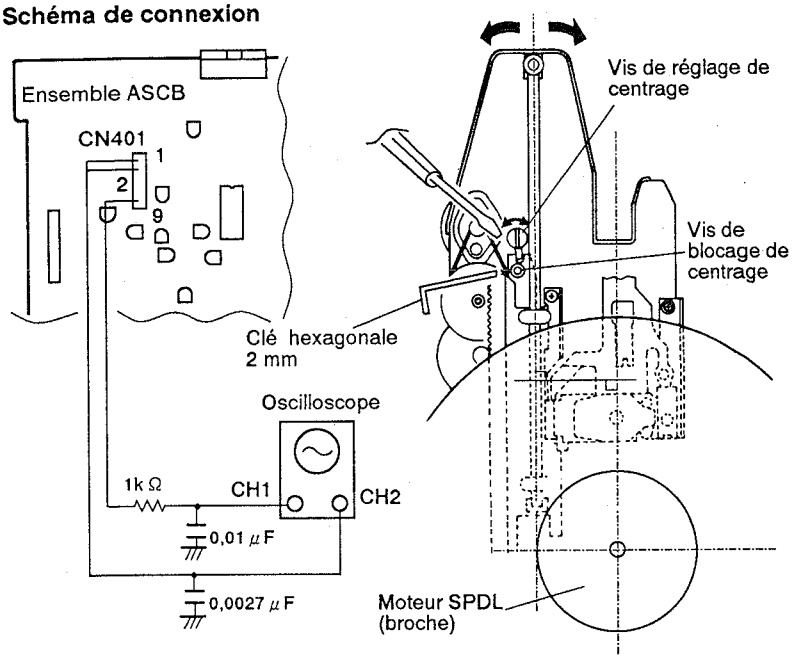
4. Rechercher le cadre #475.
5. Ajuster VR607 de sorte que l'affichage d'erreur d'inclinaison soit 7.

8. VÉRIFICATION ET RÉGLAGE DE CENTRAGE DE MOTEUR DE BROCHE

- Objet : Régler la position de l'ensemble mécanique de sorte que le moteur de broche soit au centre du passage du faisceau laser quand le capteur se déplace vers l'intérieur ou l'extérieur du disque.
- En cas de mauvais réglage : Production d'un saut de plage et allongement de la durée de recherche.

• Instruments de mesure et calibres:	• Oscilloscope • Petit tournevis • L.P.F. (0,01 μF + 1k Ω), (0,0027 μF)
• Point de mesure:	• Clé hexagonale 2 mm
• Disque d'essai et mode du lecteur:	• CH1 : CN401 - 9 (TRK ERR), CH2 : CN401 - 1, 2 (TRK A, B) • Disque d'essai LD de 8 pouces (GGV1007) • Mode d'essai (image fixe #23,800, image fixe #3,000, servo TRK ouvert, servo TILT ON)
• Positions à ajuster:	• Levier de réglage de centrage du moteur de broche

Schéma de connexion



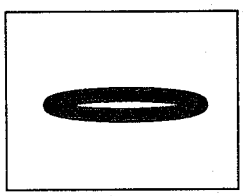


Fig. 1 Figure de Lissajous cadre #23,800

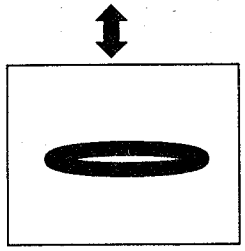


Fig. 2 Figure de Lissajous cadre #3,000

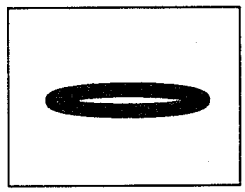


Fig. 3
Figure de Lissajous au centre du disque

Mode X-Y
CH1: 50mV/div.
CH2: 5mV/div. secteur

Procédure de réglage

Remarque: Ajuster la position de l'axe coulissant par rapport à la ligne centrale du moteur de broche (SPDL).

1. Régler l'oscilloscope au mode X - Y et raccorder CH1 (entrée X) et CH2 (entrée Y) sur CN401 - 9 et CN401 - 1, 2 respectivement.
2. Rechercher le cadre #23,800 sur le disque d'essai et observer la figure de Lissajous.
3. Rechercher le cadre #3,000 et vérifier si la bosse de la figure de Lissajous est la même que celle du cadre #23,800.

Remarque: Si la bosse de la forme d'onde de la Figure de Lissajous à l'étape 3 diffère au centre et à la périphérie, effectuer les étapes 4 à 6.

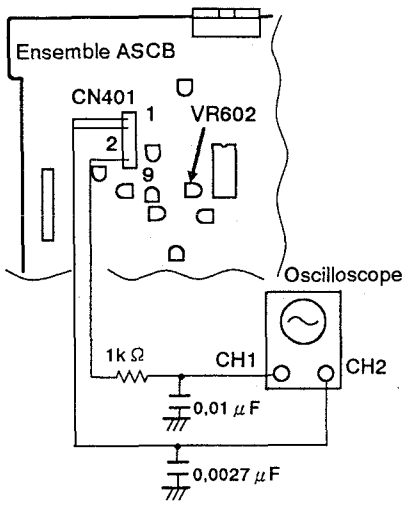
4. Rechercher le cadre #23,800 et #3,000 alternativement. Desserrer la vis de blocage de centrage et ajuster la vis de réglage de centrage du moteur de broche de sorte que les bosses des figures de Lissajous soient identiques.
5. Utiliser un disque compact et reproduire sa périphérie intérieure. Vérifier si la figure de Lissajous est la même que celle de la Fig.3.
6. Si la figure de Lissajous à la périphérie intérieure du disque compact diffère de celle de la Fig.3, répéter les étapes 4 et 5.
7. Bloquer la vis de blocage de centrage.

9. RÉGLAGE FIN DE RÉFRACTION / BALANCE TRK

- Objet : Ajuster avec précision la réfraction pour diriger les deux faisceaux laser vers le disque à la position optimale au-dessus de la piste.
- En cas de mauvais réglage : Saut de plage.

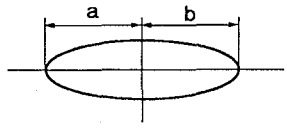
• Instruments de mesure et calibres:	• Oscilloscope • Petit tournevis • L.P.F. (0,01 μF + 1k Ω), (0,0027 μF)
• Point de mesure:	• CH1 (X) : CN401 - 9 (TRK ERR), CH2 (Y) : CN401 - 1, 2 (TRK A, B)
• Disque d'essai et mode du lecteur:	• Disque d'essai LD de 8 pouces (GGV1007) • Mode d'essai (Mode lecture, boucle servo TRK ouvert, servo TILT ON)
• Positions à ajuster:	• Fente de réfraction sur ensemble du capteur • VR602 (TRK BAL)

Schéma de connexion



• Plage d' oscilloscope:
CH1 (X): 50mV / div.
CH2 (Y): 5mV / div. Mode X-Y

Placer la sonde sur X 1 uniquement pour Y.



Cadre #3,000
Figure de Lissajous
Direction Y minimum, a=b

Procédure de réglage

1. Reproduire le disque d'essai au cadre #3,000 (périphréie intérieure) ou environ.
2. Régler l'oscilloscope en mode X - Y et raccorder CN401 - 9 (TRK ERR) et CN401 - 1, 2 (TRK A, B) à l'entrée X et à l'entrée Y respectivement. Observer alors la figure de Lissajous.
3. Insérer le bout d'un petit tournevis dans la fente de réglage de réfraction. Ajuster avec précision la réfraction pour minimiser la direction Y de la figure de Lissajous. (Voir le schéma de réglage de la page 95.)
4. Vérifier si "a" égale "b" sur la figure de Lissajous. Si "a" n'est pas égal à "b", ajuster VR602 (TRK BAL).
5. Fermer la boucle servo TRK et vérifier si l'image est normale sur l'écran TV.

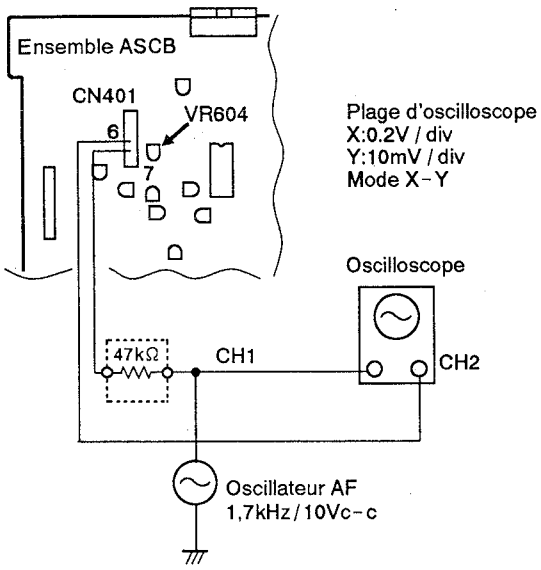
10. RÉGLAGE DE GAIN DE BOUCLE FCS

Réglages Mécaniques

- Objet : Régler le gain de boucle FCS à la position optimale.
- En cas de mauvais réglage : La lecture laisse à désirer.

• Instruments de mesure et calibres:	• Oscilloscope • Oscillateur AF (1,7kHz / 10Vc-c) • Résistance (47k Ω)
• Point de mesure:	• CH1 (X) : CN401 - 7 (FCS IN), CH2 (Y) : CN401 - 6 (FCS ERR)
• Disque d'essai et mode du lecteur:	• Disque d'essai LD de 8 pouces (GGV1007) • Mode d'essai (Image fixe, boucle servo TRK fermée, servo TILT ON)
• Positions à ajuster:	• VR604 (FCS GAIN)

Schéma de connexion



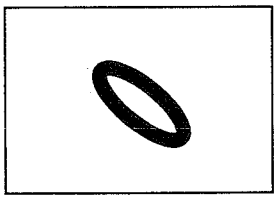


Fig. 1
Réglage inadéquat

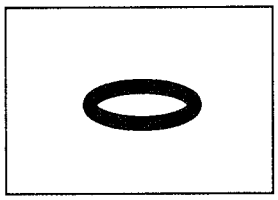


Fig. 2
Après réglage

Procédure de réglage

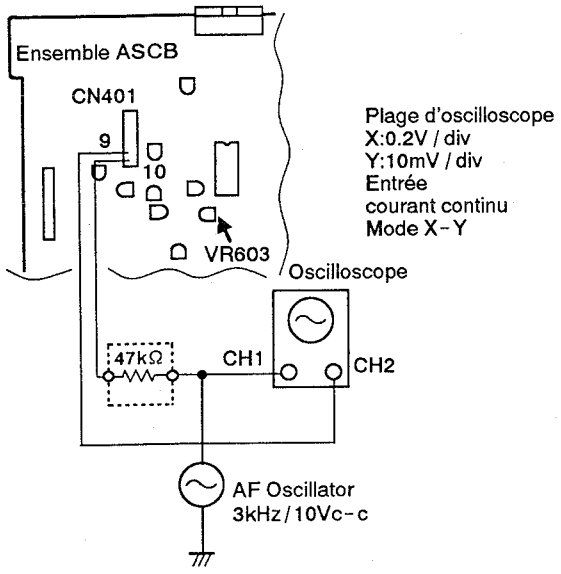
1. Rechercher le cadre #15,000 sur le disque d'essai.
2. Raccorder l'oscilloscope sur CN401 - 6 et CN401 - 7 comme illustré ci-dessus.
3. Régler l'oscilloscope au mode X - Y et observer la figure de Lissajous.
4. Ajuster VR604 de sorte que la figure de Lissajous soit symétrique par rapport aux axes X et Y. (Voir Fig. 1 et Fig. 2.)

11. RÉGLAGE DE GAIN DE BOUCLE TRKG

- Objet : Réglage optimum du gain de boucle de servo TRK
- En cas de mauvais réglage : La lecture laisse à désirer.

• Instruments de mesure et calibres:	• Oscilloscope • Oscillateur AF (3,0kHz / 10Vc-c) • Résistance (47k Ω)
• Point de mesure:	• CH1 (X) : CN401-10 (TRK IN), CH2 (Y) : CN401-9 (TRK ERR)
• Disque d'essai et mode du lecteur:	• Disque d'essai LD de 8 pouces (GGV1007) • Mode d'essai (Image fixe au cadre #15,000 (Ecran noir), servo TRK fermé, servo TILT ON)
• Positions à ajuster:	• VR603(TRK GAIN)

Schéma de connexion



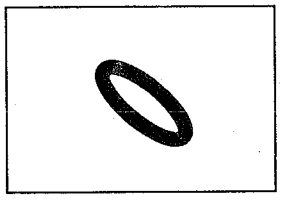


Fig. 1
Réglage inadéquat

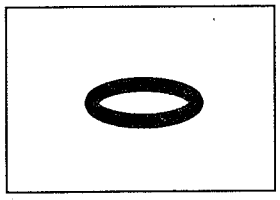


Fig. 2
Après réglage

Procédure de réglage

1. Rechercher le cadre #15,000 sur le disque d'essai.
2. Raccorder l'oscilloscope sur CN401 - 10 (TRK IN) et CN401-9 (TRK ERR) comme illustré sur le schéma ci-dessus.
3. Régler l'oscilloscope en mode X - Y et observer la figure de Lissajous.
4. Ajuster VR603 pour que la figure de Lissajous soit symétrique par rapport aux axes X et Y. (Voir Fig. 1 et 2.)

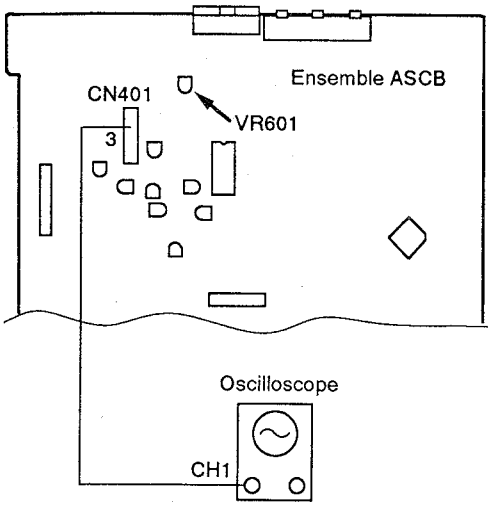
Remarque: Si la forme d'onde n'est pas observable, changer la résistance de 47 kohms en 33 kohms ou augmenter la sortie de l'oscilloscope.

12. RÉGLAGE DE GAIN RF

- Objet : Obtenir la valeur optimale de l'amplitude du signal RF.
- En cas de mauvais réglage : Chute proéminente. Les opérations de recherche et d'exploration sont instables.

• Instruments de mesure et calibres:	• Oscilloscope
• Point de mesure:	• CH1 : CN401 - 3 (RF)
• Disque d'essai et mode du lecteur:	• Disque d'essai LD de 8 pouces (GGV1007) • Mode d'essai (Image fixe, boucle servo TRK fermée, servo TILT ON)
• Positions à ajuster:	• VR601 (RF LEVEL)

Schéma de connexion



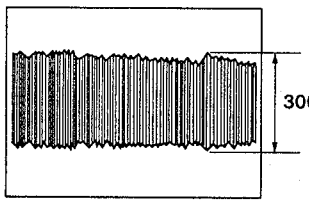


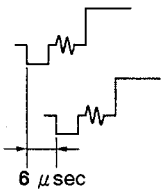
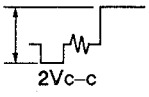
Fig. 1 Signal RF

Plage d' oscilloscope
5mV/div
2mS/div
Mode secteur

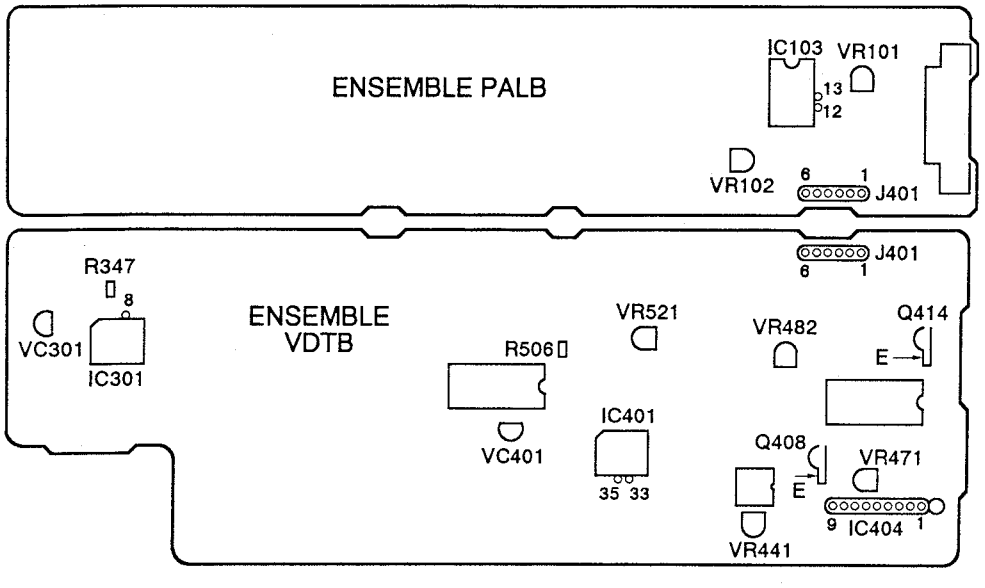
Procédure de réglage

1. Rechercher le cadre #15,000 sur le disque d'essai.
2. Raccorder l'oscilloscope sur CN401 - 3 (RF) et observer le signal RF.
3. Ajuster VR601 de sorte que l'amplitude du signal RF soit 300 mV ± 50 mV. (Voir Fig.1.)

7.4.4 RÉGLAGES ELECTRIQUESS

	Réglage	Point de Réglage	Spécifications de Réglage	Norme d'Inspection	Remarques
	Ensemble VDTB				
1	Réglage de rythmeur de synchro-générateur	VC401	Ajuster VC401 sur 17,734475MHz au côté OPEN de R506.	17,734475MHz ± 100Hz	
2	Réglage de rythmeur REF	VC301	Ajuster sur 3,5546875MHz à la broche 8 (R347) de IC301. Ou ajuster de sortge que 1H de vidéo PB dure 10 secondes de plus que la valeur du signal vidéo de référence.	3,5546875MHz ± 25Hz 15,6250kHz ± 0,1Hz	
3	Réglage de fréquence centrale VCO	VR471	 Ajuster VR471 de sorte que le retard horaire entre le signal vidéo d'entrée CCD (émetteur Q408) et le signal vidéo de sottie CCD (émetteur Q414) soit 70 µsec (1H+6 µsec). Pour ce réglage, raccoder la broche 9 de IC404 sur GND.	70 µsec ± 1,4 µsec	
4	Réglage de niveau vidéo	VR482	 Ajuster le niveau vidéo blanc 100% sur 2Vc-c au VIDEO OUT (J401, broche 6).	2Vc-c ± 5%	
5	Réglage de niveau vidéo de retard 1H	VR441	Ajuster VR441 de sorte que le niveau du signal vidéo de retard 1H à la broche 33 de IC401 soit le même que celui du signal vidéo de ligne à la broche 35.	Signal vidéo de ligne ± 3%	
6	Réglage de niveau VPS ERR	VR521	Tout en observant l'écran magenta sur le vectorscope, minimiser l'instabilité au VIDEO OUT (J401, broche 6).		
	Ensemble PALB				
7	Réglage de niveau vidéo MOD	VR102	Ajuster VR102 de sorte que le niveau de luminance du signal vidéo MOD à la broche 13 de IC103 soit le même que celui du signal vidéo à la broche 12.	± 3%	
8	Réglage de niveau SC de retard 1H	VR101	Tout en observant les barres couleur en mode d'image fixe sur un vectorscope, minimiser la variation de gain à VIDEO OUT (J401, broche 6).		

- **POINT DU RÉGLAGE**

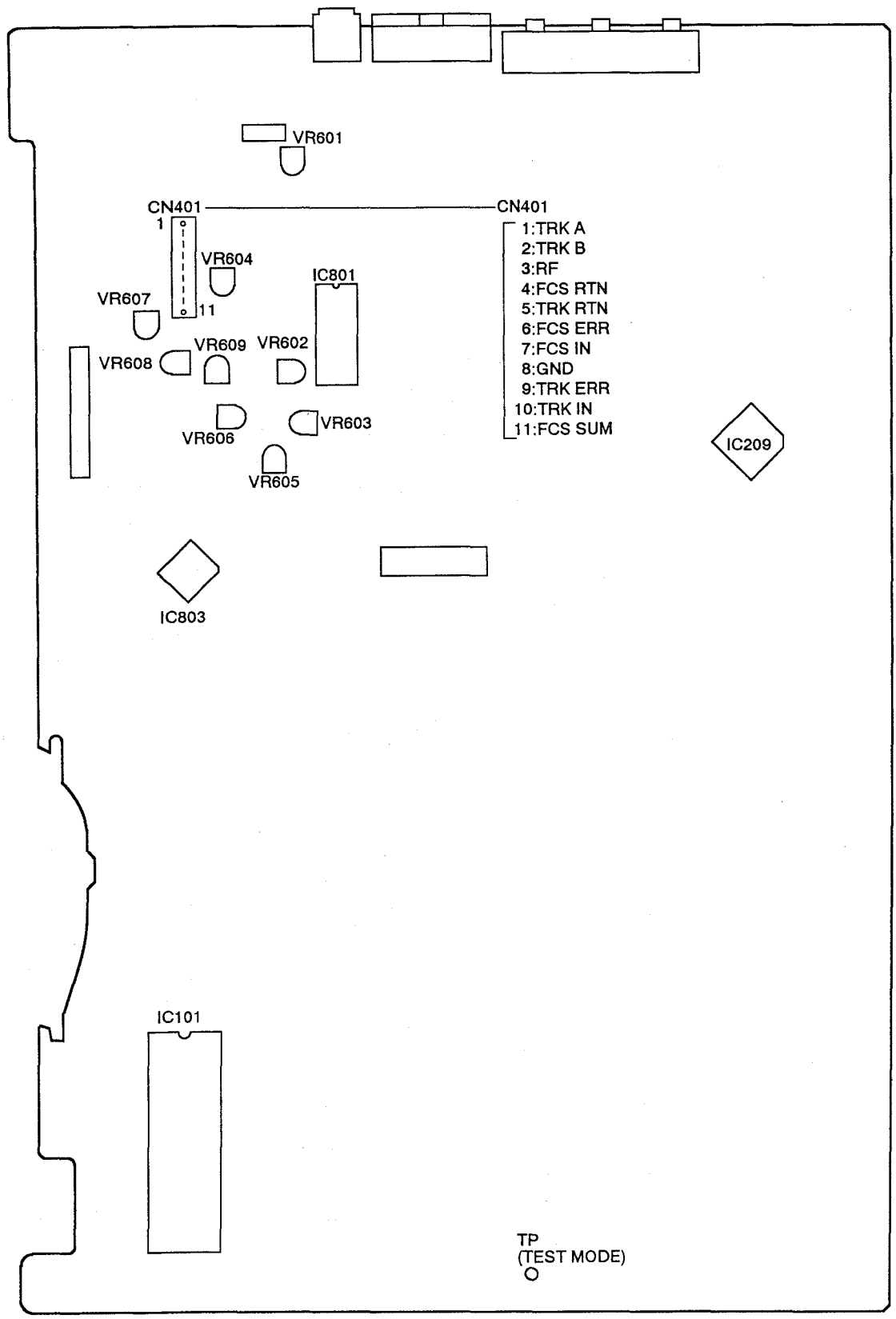


7. AJUSTES

7.1 SUMARIO DE LOS AJUSTES DEL CONJUNTO DEL ASCB

	Ajuste	Punto de Ajuste	Equipo de Medición y Puntos de Conexión	Condicione el reproductor	Especificación de ajuste
1	Ajuste del servo de la ganancia de inclinación	VR608	No hay	Desconecte la alimentación	• Posición de GAIN VR de inclinación Rojo: Gire hacia la derecha Nada: Centro Azul:Gire hacia la izquierda
2	Ajuste aproximado de la retícula y ajuste del equilibrio de error de seguimiento	Retícura/VR602	CN401-9 (TRK ERR)	• Modo de prueba n. °15,000 Abierto del bucle de servos de seguimiento	• Punto nulo → Error de TRK a MAX • Ajuste VR602 hasta que los niveles positivo y negativo de la amplitud de la forma de onda del error TRK sean iguales.
3	Ajuste del nivel del eje de la corredera	Tecla SKIP del reproductor	CN401-4 (FCS RTN)	• Modo de prueba OFF del bucle de servos de inclinación Abierto del bucle de servos de seguimiento n. °5,200	• Use la tecla SKIP para ajustar a 0V ± 20 mV.
4	Ajuste de la inclinación del captor	Tornillo para ajuste del conjunto del captor TAN/ inclinación TRK	CN401-3(RF)	• Modo de prueba n. °2,251 fijo Cerrado/abierto del bucle de servos de seguimiento Abierto del bucle de servos de inclinación	• La amplitud de la forma de onda de RF a MAX. (Tornillo para el ajuste de TAN/ TRK del captor) • Diafonía mínima
5	Ajuste del error de seguimiento/ajuste de la diafonía	VR605 (TE BEST) VR606 (CT BEST)	CN401-9(TRK ERR) CN401-3(RF)	• Modo de prueba Cerrado/abierto del bucle de servos de seguimiento OFF del bucle de servos de inclinación	• RF a MAX (VR606) Error de TRK a MAX (VR605)
6	Ajuste del nivel de la suma del foco	VR609	CN401-11 (FCS SUM)	• Modo de reproducción	• Ajuste VR609 hasta que la tensión sea de 1,5 VCC.
7	Ajuste del sensor de inclinación/ajuste del equilibrio de la inclinación	Tornillo para el ajuste del sensor de inclinación VR607(TILT BAL)	Monitor de TV Pantalla de modo de prueba	• Mode de prueba Fijo de n. °16,200 / n.°475 Cerrado del bucle de servos de seguimiento OFF del bucle de servos de inclinación	• Coloque VR607 en el centro. • Ajuste el tornillo para el ajuste hasta que el código de la visualización del error de inclinación sea 6,7 ó 8. • Ajuste VR607 hasta que la visualización del error de inclinación sea 7.
8	Comprobación y ajuste del centrado del motor del eje central	Tornillo para el ajuste del centrado del motor del eje central	CH1:CN401-9 (TRK ERR) CH2:CN401-1, 2 (TRK SUM) (Modo de X-Y)	• Mode de prueba Fijo de n. °23,800 /n. °3,000 Abierto del bucle de servos de seguimuento ON del bucle de servos de inclinación	• Ajuste el tornillo para el ajuste del centrado hasta que las figuras de Lissajous n. °3,000 y n. °23,800 sean aguales.
9	Ajuste fino de la retícula y ajuste del equilibrio de seguimiento	Retícula/VR602	CH1:CN401-9 (TRK ERR) CH2:CN401-1, 2 (TRK SUM) (Modo de X-Y)	• Mode de prueba Abierto del bucle de servos de seguimuento ON del bucle de servos de inclinación	• Reduzca la anchura del sentido del eje Y de la figura de Lissajous. • Los niveles del sentido del eje de las figuras de Lissajous son iguales.
10	Ajuste de la ganancia del bucle de servos del foco	VR604	CH1:CN401-7 (FCS IN) CH2:CN401-6 (FCS ERR) (Modo de X-Y)	• Mode de prueba Fijo de n. °15,000 Cerrado del bucle de servos de seguimiento ON del bucle de servos de inclinación	• Ajuste VR604 hasta que la figura de Lissajous sea simétrica con respecto a los ejes X e Y.
11	Ajuste de la ganancia del bucle de servos de seguimiento	VR603	CH1:CN401-10 (TRK IN) CH2:CN401-9 (TRK ERR) (Modo de X-Y)	• Mode de prueba Fijo de n. °15,000 Cerrado del bucle de servos de seguimiento ON del bucle de servos de inclinación	• Ajuste VR603 hasta que la figura de Lissajous sea simétrica con respecto a los ejes X e Y.
12	Ajuste de la ganancia de RF	VR601	CN401-3(RF)	• Fijo de n. °15,000	• Ajuste VR601 hasta que el nivel de RF sea de 300 mV ± 50 mV.

7.2 PUNTOS DE AJUSTE DEL CONJUNTO DEL ASCB

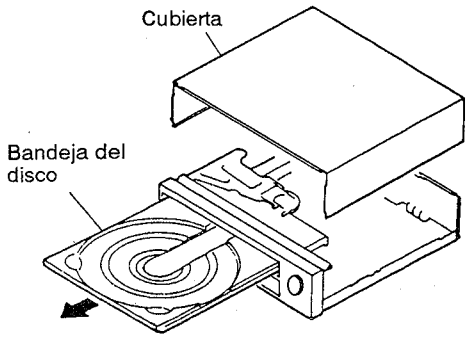


7.3 MODO DE PRUEBA

7.3.1 MODO DE PRUEBA

El reproductor tiene la función del modo de prueba para permitir el hombre de servicios a comprobar el estado del reproductor sobre la pantalla de TV por las teclas respectivas.

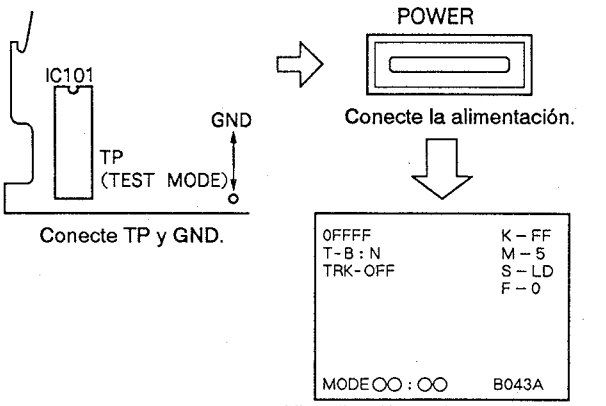
Además, el servo de seguimiento se abre y se cierre fácilmente, el modo de prueba es muy útil para los ajustes mecánicos.



7.3.2 INICIACION DEL MODO DE PRUEBA

[Procedimiento]

1. Remueva la cubierta y la bandeja del disco.
2. Conecte TP (MODO DE PRUEBA) situado en el conjunto de tabla ASCB a GND.
3. Conecte la alimentación.
4. Desconecte TP y GND.



Visualización en la pantalla de TV

7.3.3 CANCELACIÓN DEL MODO DE PRUEBA

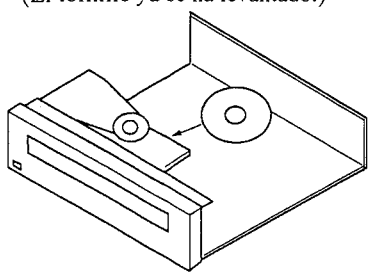
Desconecte la alimentación.

7.3.4 FUNCIÓN DEL REPRODUCTOR EN EL MODO DE PRUEBA

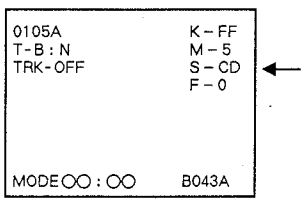
Maneje el reproductor por seleccionando la función del modo de prueba con las teclas sobre el reproductor o sobre el control remote.

- Reproducción de CD

① Ponga el CD (disco compacto) sobre el plato giratorio.
(El tornillo ya se ha levantado.)



② Presione la tecla [◀◀] o [▶▶] para que la visualización "S-CD" se muestre en la pantalla de TV.

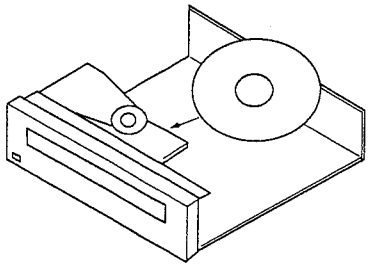


Visualización en la pantalla de TV

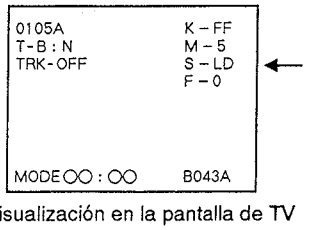
③ Sujete el disco presionando la tecla PLAY (▶) una vez.
Después, presione la tecla PLAY (▶) dos veces. El disco se reproducirá normalmente.

- Reproducción de LD

① Ponga el disco LD sobre el plato giratorio.
(El tornillo ya se ha levantado.)



② Presione la tecla [◀◀] o [▶▶] para que la visualización "S-LD" se muestre en la pantalla de TV.



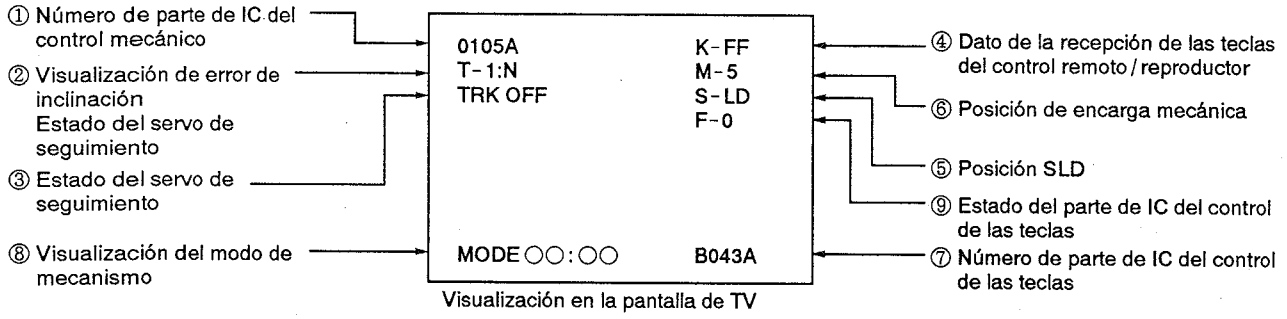
Visualización en la pantalla de TV

③ Sujete el disco presionando la tecla PLAY (▶) una vez.
Después, presione la tecla PLAY (▶) dos veces. El disco se reproducirá normalmente.

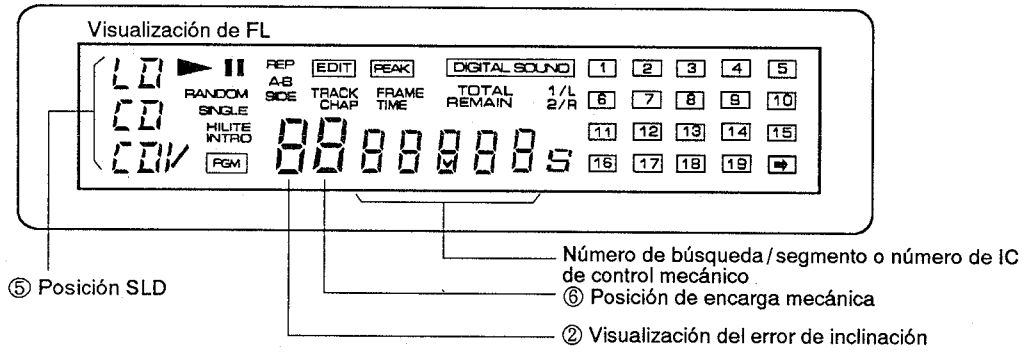
Tabla. Función en el modo de prueba

Función	Estado del Reproductor	Función de tecla	Notas
Bandeja abierta	Modo STOP	▲	
Bandeja cerrada	Bandeja abierta	▲	
Parada	Modo PLAY	■	
Reproducción	Colocación del disco y la bandeja cerrada	▶	• Empieza la reproducción con el servo de seguimiento abierto. • Empieza la reproducción con la inclinación neutral. • El tipo del disco (LD/CD/CDV) se determina cuando la reproducción se empieza en la posición SLDR.
Abierto/cerrado del servo de seguimiento	Modo PLAY	▶	• Cada vez que la tecla PLAY (▶) se presiona, el servo de seguimiento será abierto o cerrado alternadamente.
Fijo	Modo PLAY Cerrado del servo de seguimiento	❚❚	• Cada vez que la tecla STILL (❚❚) se presiona, el reproductor se cambia entre los modos PLAY y STILL alternadamente.
SLDR REV SCAN	Modo PLAY	◀◀	• A la izquieda • Con el servo de seguimiento abierto, el captor puede ser dañado si el SLD mueva más al interior que la área de conducción sobre el disco. No haga el SLD mover más al interior que la área de conducción.
SLDR FWD SCAN	Modo PLAY	▶▶	• A la derecha • Con el servo de seguimiento abierto, el captor puede ser dañado si el SLD mueva más al exterior que la área de conducción sobre el disco. No haga el SLD mover más al exterior que la área de conducción.
Inclinación neutral	Interruptor POWER ON	EDIT	
ON del servo de inclinación	Modo PLAY	RANDOM PLAY	
Menos de la inclinación OFF del servo de inclinación	Modo PLAY	|◀◀	• Presione y retenga las teclas.
Más de la inclinación OFF del servo de inclinación	Modo PLAY	▶▶|	• Presione y retenga las teclas.
ON/OFF de la visualización en la pantalla	Interruptor POWER ON	Tecla PGM	
Búsqueda de segmento	Modo PLAY	Tecla +10 ↓ Teclas 0-9 ↓ ▶	• En el modo de PLAY, presione la tecla +10. (El reproductor será preparado para la entrada del número de segmento.) • Use las teclas numéricas (0 – 9) para entrar el número de segmento. Después, presione la tecla PLAY del reproductor para la búsqueda. • Después de completar la búsqueda, el reproductor se volverá al modo anterior.
Rotación del motor de carga hacia la derecha y hacia la izquierda	Bandeja abierta	▶▶| |◀◀	• FWD:Descargar • REV :Encargar
FOCS OFFSET (CT BEST) Comprobación de VR606	Modo PLAY (el servo de seguimiento OPEN)	(Control remoto) MULTI-SPEED FWD →F-1 REV →F-0 (Reproductor) HILITE INTRO SCAN	• Para comprobar VR604 F-0 : Modo normal •Cuando cierre el servo de seguimiento, VR606 (CT BEST) es efectivo. •Cuando abre el servo de seguimiento, VR605 (TE MAX) es efectivo. F-1 : Cuando abre el servo de seguimiento, VR606 (CT BEST) es también efectivo.

7.3.5 VISUALIZACIÓNES EN LA PANTALLA DE TV Y DE LED EN EL MODO DE PRUEBA



Visualización en la pantalla de TV



① Se mostrará el número de parte de IC (conjunto de tabla ASCB) del control mecánico.

PD0105A1 → 0105A

② Estado del servo de inclinación / Visualización del error de inclinación

T-○:○○

- Estado de servo de inclinación:
  - N...Inclinación neutral
  - ON...ON del servo de inclinación
  - OFF...OFF del servo de inclinación
- Visualización del error de inclinación
  - 0 Inclinación −
  - ↕ Inclinación neutral
  - F Inclinación +

③ Estado del servo de seguimiento

Visualización en la pantalla de TV

TRK-○○○

└— ON...Cerrado del servo de seguimiento
OFF...Abierto del servo de seguimiento

④ Dato de la recepción de las teclas del control remoto / reproductor

Visualización en la pantalla de TV

K-○○

└— Vea la tabla abajo.

Código	Función	Código	Función	Código	Función	Código	Función
00	0	20	F JOG0	40	(CHAP / TRK)	60	
01	1	21	F JOG1	41	(FRAM / TIM)	61	
02	2	22	F JOG2	42	(SEARCH)	62	
03	3	23	F JOG3	43	DISPLAY	63	
04	4	24	R JOG0	44	REPEAT B	64	
05	5	25	R JOG1	45	CLEAR	65	
06	6	26	R JOG2	46	SPEED –	66	
07	7	27	R JOG3	47	SPEED +	67	
08	8	28		48	REPEAT A	68	
09	9	29		49	(2 / R)	69	
0A	VOLUME +	2A		4A	(STEREO)	6A	
0B	VOLUME –	2B		4B	(1 / L)	6B	
0C	DGT / ANL	2C		4C	PROGRAM	6C	
0D		2D		4D		6D	PLAY /PAUSE
0E	CX ON/OFF	2E		4E		6E	STOP
0F	(TV / LDP)	2F		4F		6F	OPEN / CLOSE
10	(F-SCAN)	30		50	F-STEP	70	
11	(R-SCAN)	31		51		71	DIRECT CD
12		32		52	F-SKIP	72	PEAK
13	CHAP / FRME	33		53	R-SKIP	73	SINGLE
14		34		54	R-STEP	74	
15		35		55	R-MULT	75	
16	STOP / OPEN	36		56		76	
17	PLAY/SERCH	37	DGT LEVEL	57		77	
18	PAUSE	38		58	F-MULT	78	
19		39		59		79	
1A	(POW ON)	3A		5A	HILIT / INTR	7A	
1B	(POW OFF)	3B		5B		7B	
1C	POW ON/OFF	3C		5C		7C	
1D	EDIT	3D		5D		7D	
1E	AUDIO	3E		5E	RNDM (TEST)	7E	
1F	+10	3F		5F	(ESC)	7F	

⑤ Posición de SLD

Visualización en la pantalla de TV

S-○○○

└— IN ... ON del interruptor interior del CD
CD ... Área activo del CD
CDV ... Área activo del CDV
LD ... Área activo del LD

⑥ Posición de encarga mecánica

Visualización en la pantalla de TV

M-○

└— 0 ... Abierto de la bandeja
1 ... Encarga
2 ... Preparado
3 ... Sujetado
5 ... Menos de inclinación
6 ... Inclinación neutral (un lado)
7 ... Más de inclinación
8 ... Limite de inclinación
9 ... El lado B sujetado (dos lados)

⑦ Estado compensador de VR de foco

Visualización en la pantalla de TV

F-○

└ 0 ... Modo normal
•Cuando cierre el servo de seguimiento, VR606 (CT BEST) es efectivo.
•Cuando abre el servo de seguimiento, VR605 (TE MAX) es efectivo.
1 ... Cuando abre el servo de seguimiento, VR606 (CT BEST) es también efectivo.

7.4 AJUSTES

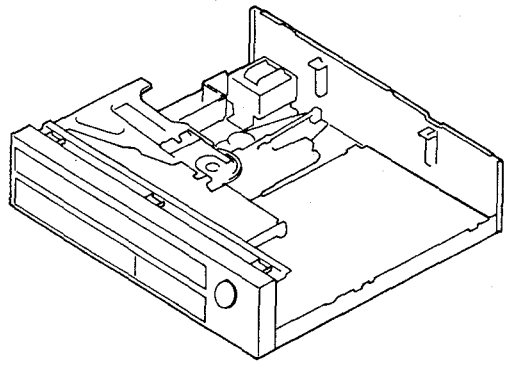
7.4.1 Instrumentos Requeridos

- Destornillador pequeño (con un mango de aprox.7cm)
- Destornillador pequeño de Phillips (con un mango de aprox. 15cm)
- Filtro de paso bajo (47 kilohmios + 1 μF/BP)
- Osciloscopio de doble traza (con retardo)
- Oscilador de AF
- Frecuencímetro
- Disco de prueba LD (GGV1007)
- Disco LDD de 8 pulgadas
- Disco CDV
- Presilla cortocircuitadora
- Monitor de TV
- Resistor (1kilohmios, 47kilohmios)
- Capacitor (0,01 μF, 0,027 μF)
- Control remoto
- Llave inglesa hexagonal de 2mm

7.4.2 Preparativos y Precauciones Para los Ajustes

1. Preparativo Para el Reproductor

Antes de realizar el ajuste, quite la cubierta y la bandeja. Luego, coloque el reproductor horizontalmente sobre la superficie plana.



2. Inserción del Disco

Inserte el disco desde atrás del reproductor. Colóquelo seguramente sobre el plato giratorio. Cuando se presiona la tecla PLAY, el sujetador se descenderá para sujetar el disco. Luego se comenzará la reproducción.

3. Use Todas las Sondas de Osciloscopio de 10:1.

4. Sólo el Conjunto Principal se Necesita Ajustarse.

Ajustes	Reemplazos				
	Captor	Actuador	Precaptor	Eje de motor	Sensor de inclinación
1. Ajuste de la Ganancia de Servo de Inclinación	◎				◎
2. Ajuste Aproximado de la Retícula y Ajuste del Equilibrio de Error de Seguimiento	◎	◎	◎		
3. Ajuste del Nivel del Eje de la Corredera	◎	◎	◎	○	◎
4. Ajuste de la Inclinación del Captor	◎	◎	◎	○	○
5. Ajuste del Error de Seguimiento/Ajuste de la Diafonía	◎	◎	◎	○	○
6. Ajuste del Nivel de la Suma del Foco	◎	◎	◎	○	○
7. Ajuste del Sensor de Inclinación/Ajuste del Equilibrio de la Inclinación	◎	◎	◎	○	◎
8. Comprobación y Ajuste del Centrado del Motor del Eje Central	◎	◎	◎	◎	
9. Ajuste fino de la Retícula y Ajuste del equilibrio de Seguimiento	◎	◎	◎		
10. Ajuste de la Ganancia del Bucle de Servos del Foco	◎	◎	◎		
11. Ajuste de la Ganancia del Bucle de Servos de Seguimiento	◎	◎	◎		
12. Ajuste de la Ganancia de RF	◎	◎	◎		

Nota: Ajustes marcados con ○ se realizan solamente cuando se aparece la diafonía.

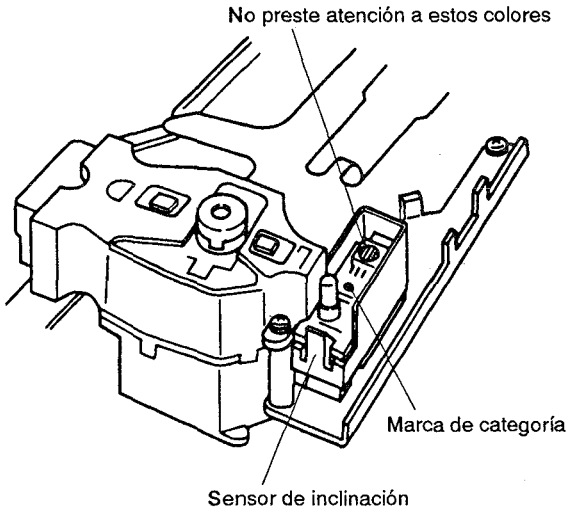
7.4.3 AJUSTES MECANICOS

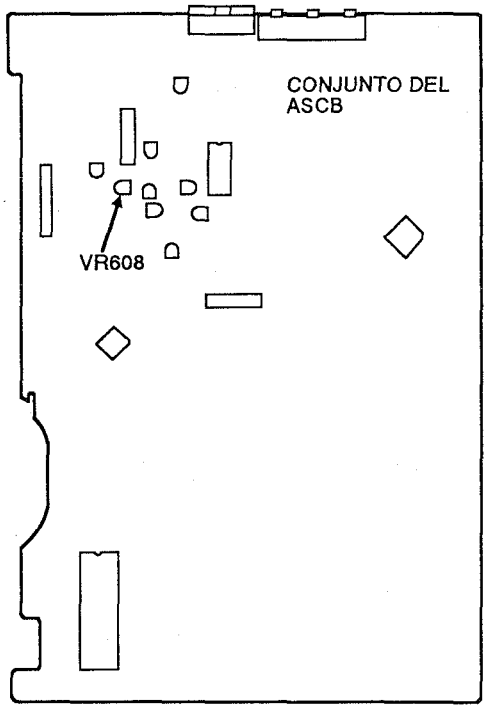
1. AJUSTE DE LA GANANCIA DE SERVOS DE INCLINACIÓN

- Propósito: Para ajustar la ganancia de servos de inclinación de acuerdo con la categoría de sensibilidad(nivel) del sensor de inclinación.
- Cuando no se ajuata correctamente: Oscilación aumentada del servo de inclinación o diafonía.

• Instrumentos y dispositivos de medida: • Punto de medita: • Disco de prueba y el modo de reproductor:	• Destornillador pequeño
• Posiciones para ajustarse:	• VR608(TILT GAIN)

Diagrama de conexiones





Procedimiento de ajuste

1. Use un destornillador para ajustar el ángulo de VR608 sobre el conjunto del ASCB de acuerdo con el color de la indicación de categoría.

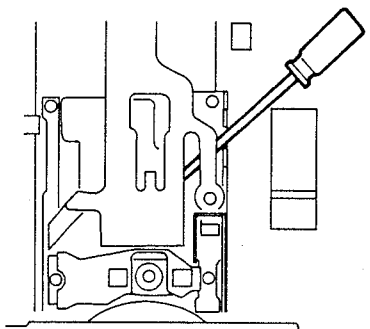
Categoría	Color	Angule de VR
A	Rojo	Hacia la derecha
B	Nada	Centro mecánico
C	Azul	Hacia la izquierda

2. AJUSTE APROXIMADO DE LA RETICULA Y AJUSTE DEL EQUILIBRIO DE ERROR DE SEGUIMIENTO

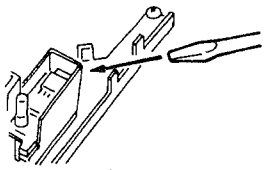
- Propósito: Para ajustar la retícula para la reproducción de discos y reproducción trucada.
- Cuando no se ajusta correctamente: No se reproducción los discos. Salto de pistas se ocurre.

• Instrumentos y dispositivos de medida:	● Monitor de TV ● Destornillador pequeño ● Osciloscopio
• Punto de medita:	● CN401 - 9 (TRK ERR) y GND
• Disco de prueba y el modo de reproductor:	● Disco de prueba de 8 pulgadas (GGV1007) ● Modo de prueba (Reproducción de disco, Abuerto del servo TRK, OFF del servo de inclinación)
• Posiciones para ajustarse:	● Retícula del conjunto de captor ● VR602 (TRK BAL).

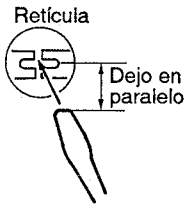
Diagrama de conexiones

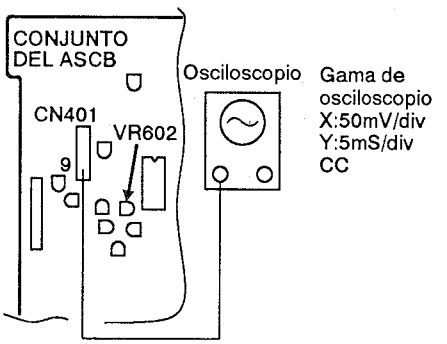


(Vista desde arriba)
Dirección de inserción del destornillador



Inserte el destornillador en la ranura horizontalmente para la base.





Gama de osciloscopio
X:50mV/div
Y:5mS/div
CC

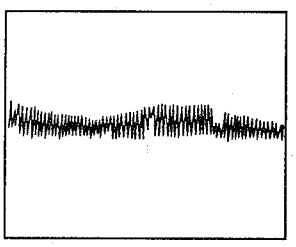


Fig.1 Punto nulo

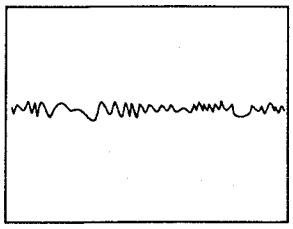


Fig.2 Esto no es el punto nulo

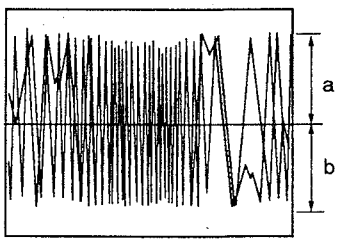


Fig.3 Error maxímo de seguimiento

Los niveles positivo y negativo son iguales.

Procedimiento de ajuste

Ajuste aproximado de la retícula

1. Inserte el disco de prueba y presione la tecla PLAY.
2. Mueva el captor hasta cerca del fotograma n.° 15,000.
3. Abra el servo TRK.
4. Conecte CN401 - 9 al osciloscopio para observar la forma de onda.
5. Deslice la punta del destornillador por la guía y insértelo en el orificio de ajuste de la retícula horizontalmente. Ajuste el ángulo de retícula para que la forma de onda sea mínima y se obtenga la envolvente más uniforme (Este punto se dice el punto nulo). (Vea las figuras 1 y 2.)
6. Gire el destornillador hacia la izquierda hasta que la amplitud de la forma de onda del error TRK alcance su máximo por primera vez desde el punto nulo. (Vea la figura 3.)

Ajuste del equilibrio de seguimiento (TRK)

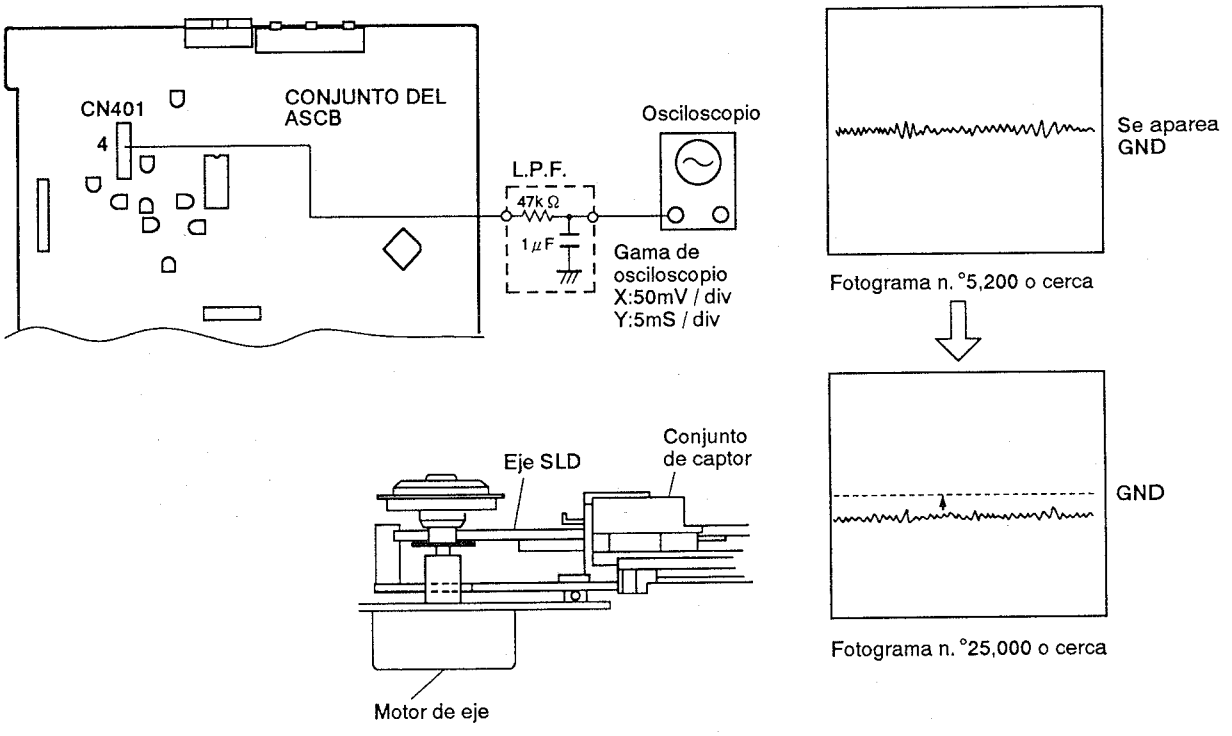
1. Ajuste VR602 para que los niveles positivo y negativo de la amplitud de la forma de onda sean iguales. (Vea la figura 3.)
2. Cierre el servo TRK y compruebe si la imagen en la pantalla de TV aparece normalmente.

3. AJUSTE DEL NIVEL DEL EJE DE LA CORREDERA

- Propósito: Para hacer el eje de la corredera horizontalmente de manera que el captor pueda mover horizontalmente sobre el disco.
- Cuando no se ajusta correctamente: Con el disco deformado, el servo de foco no funciona en el interior o exterior del disco.

• Instrumentos y dispositivos de medida:	● Osciloscopio ● Filtro de paso bajo (47k Ω + 1 μF)
• Punto de medita:	● CN401 - 4 (FCS RTN) y GND
• Disco de prueba y el modo de reproductor:	● Disco de prueba de 8 pulgadas (GGV1007) ● Modo de prueba (n.°5,200, fijo, abierto del servo TRK, OFF del servos de inclinación)
• Posiciones para ajustarse:	● Tecla SKIP del reproductor(en el modo de prueba)

Diagrama de conexiones



Procedimiento de ajuste

1. Use la tecla SCAN para alimentar la corredera hasta cerca del fotograma n.°5,200 (soporte de inclinación) sobre el disco de prueba. Abre el servo TRK.
2. Conecte el osciloscopio a CN401 - 4 por L.P.F. y aparee el centro de la forma de onda con el GND del osciloscopio.
3. Busque el fotograma n.°25,000 y use la tecla SKIP para ajustar el centro de la forma de onda a 0V ± 20mV.

Nota: Con respecto al modo de prueba, vea la sección "7.3 MODO DE PRUEBA".

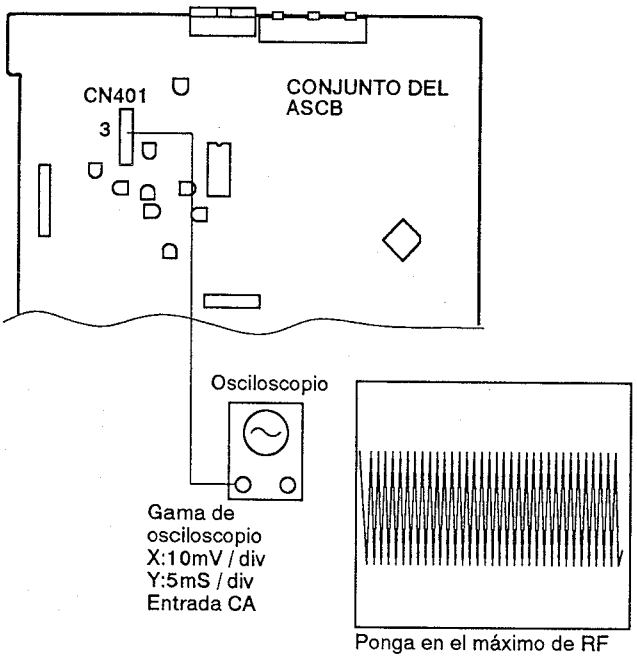
Nota: Este ajuste es tan crítico que afectará a los ajustes siguientes.

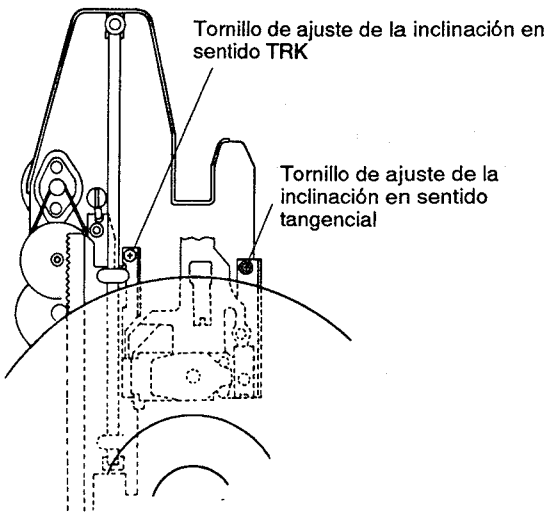
4. AJUSTE DE LA INCLINACIÓN DEL CAPTOR

- Propósito: Para ajustar la inclinación del captor hasta que el rayo lasérico golpee el disco verticalmente.
- Cuando no se ajusta correctamente: Se ocurre la diafonía.

• Instrumentos y dispositivos de medida:	• Monitor de TV • Osciloscopio
• Punto de medita:	• CN401 - 3 (RF)
• Disco de prueba y el modo de reproductor:	• Disco de prueba LD de 8 pulgadas (GGV1007) • Modo de prueba(n. °2,251, fijo (Pantalla negra))
• Posiciones para ajustarse:	• Conjunto de captor TRK/Tornillos para el ajuste de la inclinación en sentido tangencial

Diagrama de conexiones





Procedimiento de ajuste

1. Conecte el osciloscopio a CN401 - 3.
2. Busque el fotograma n. ° 2,251 para observar la forma de onda.
3. Ajuste el tornillo de ajuste de la inclinación en sentido TRK y el tornillo de ajuste de la inclinación en sentido tangencial hasta que la amplitud de la forma de onda sea máxima.
4. Observe la pantalla de TV y asegúrese de no hay diafonía.

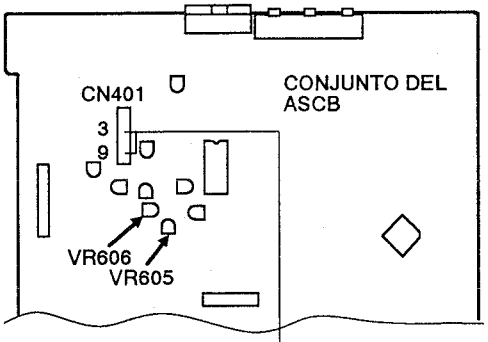
Nota: Si se ocurre todavía la diafonía, realice los procedimientos siguientes.

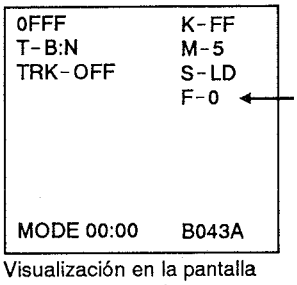
5. AJUSTE DEL ERROR DE SEGUIMIENTO/AJUSTE DE LA DIAFONÍA

- Próposito: Para ajustar el servo de foco en el estado óptimo cuando se hace la reproducción normal o se salta la pista(búsqueda).
- Cuando no se ajusta correctamete: Se ocurre la diafonía.

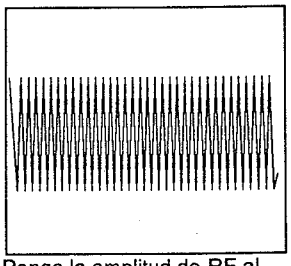
• Instrumentos y dispositivos de medida:	● Monitor de TV ● Osciloscopio
• Punto de medita:	● CN401-3 (RF) ● CN401-9 (TRK ERR) ● Terminal VIDEO OUT del reproductor
• Disco de prueba y el modo de reproductor:	● Disco de prueba LD 8 pulgadas (GGV1007) ● Modo de prueba (Cerrado/abierto del servo TRK, OFF del servo de inclinación)
• Posiciones para ajustarse:	● VR605 (TE MAX) ● VR606 (CT BEST)

Diagrama de conexiones

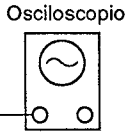




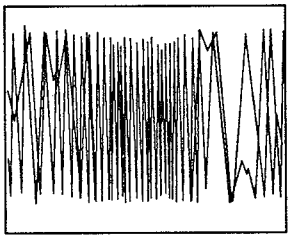
Visualización en la pantalla de modo de prueba



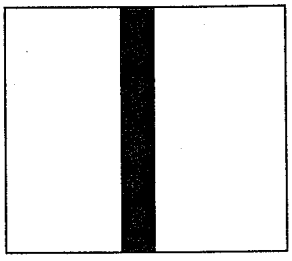
Ponga la amplitud de RF al máximo en el fotograma n. °2,701



Gama de osciloscopio
X:10mV / div
Y:5mS / div
Entrada CA



Se aumenta el error de seguimiento



Se reduce la diafonía de n.°475 al mímino.

Procedimiento de ajuste

Nota: Realice este ajuste cuando todavía se ocurre la diafonía perceptible en la visualización en la pantalla como se escribe en la sección"4. Ajuste de la inclinación del captor"

1. Conecte el osciloscopio CN401-9.
2. Abre el servo TRK.
3. Compruebe que la visualización en la pantalla de modo de prueba está F-0.
   Si no, ponga la tecla MULTI-SPEED REV del control remoto en F-0.
4. Ajuste VR605 hasta que la amplitud de la forma de onda del error TRKG sea máxima.
5. Cierre el servo TRKG.
6. Conecte el osciloscopio a CN401-3.
7. Presione la tecla MULTI-SPEED FWD del control remoto hasta que se muestre "F-1" en la pantalla de TV
8. Busque el fotograma n. °2,251 y ajuste VR606 hasta que la amplitud de la forma de onda RF sea máxima.
9. Compruebe que la diafonía en la pantalla de TV está mínima en el fotograma n.°475.

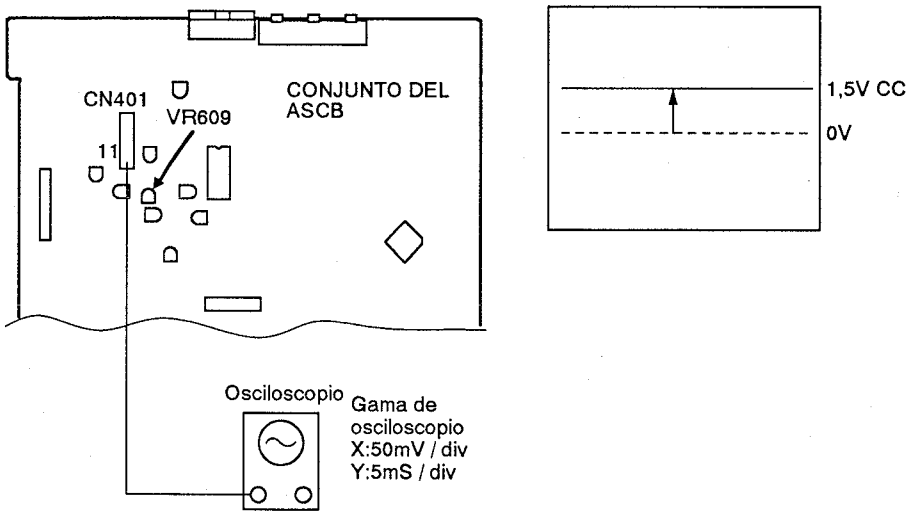
Nota: Después del ajuste, asegúrese de hacer el "Ajuste del nivel de la suma del foco" en la sección 6.

6. AJUSTE DEL NIVEL DE LA SUMA DEL FOCO

- Propósito: Para ajustar el nivel de suma (FCS SUM) de B1 – B4 al valor óptimo para activar el servo FOCS.
- Cuando no se ajusta correctamente: Se ocurre la diafonía.

• Instrumentos y dispositivos de medida:	● Monitor de TV ● Osciloscopio
• Punto de medita:	● CN401 - 11 (FCS SUM)
• Disco de prueba y el modo de reproductor:	● Disco de prueba LD de 8 pulgadas (GGV1007) ● Modo de reproducción normal
• Posiciones para ajustarse:	● VR609 (FCS SUM LEVEL)

Diagrama de conexiones



Procedimiento de ajuste

Nota:Realice este ajuste después de la sección "5. Ajuste del error de seguimiento/ajuste de la diafonía"

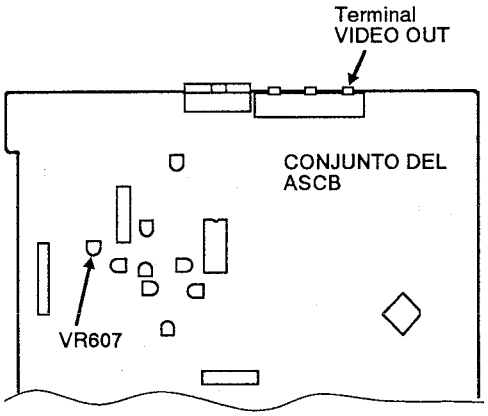
1. Conecte el osciloscopio a CN401 - 11.
2. Ajuste VR609 hasta que la tensión sea 1,5V CC.

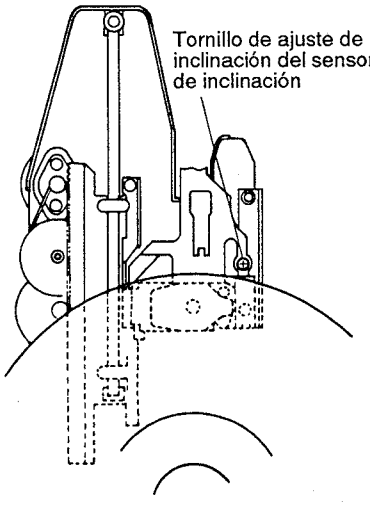
7. AJUSTE DEL SENSOR DE INCLINACIÓN/AJUSTE DEL EQUILIBLIO DE LA INCLINACIÓN

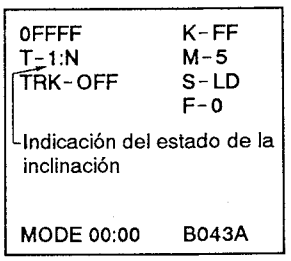
- Propósito: Para justar el LED del sensor de inclinación verticalmente al disco. También, para compensar la diferencia de sensibilidad entre dos sensores.
- Cuando no se ajusta correctamente: Se ocurre la diafonía.

• Instrumentos y dispositivos de medida:	● Monitor de TV ● Destornillador pequeño de Phillips
• Punto de medita:	● Terminal VIDEO OUT del reproductor
• Disco de prueba y el modo de reproductor:	● Disco de prueba LD de 8 pulgadas (GGV1007) ● Modo de prueba (n.°16,200 fijo, Cerrado del servo TRK, OFF del servo de la inclinación)
• Posiciones para ajustarse:	● Tornillo de ajuste de la inclinación del servo de inclibación ● VR607 (TILT BAL).

Diagram de conexiones







Visualización en la pantalla de TV

Nota: Esta visualización indica la localización del error de la inclinación. Otras visualizaciónes se difieren poco del estado actual.

Procedimiento de ajuste

1. Busque el fotograma n.°16,200 en el disco de prueba.
2. Ponga VR607 en el centro mecánico.
3. Ajuste el tornillo de ajuste de la inclinación del sensor de inclinación hasta que el código de la visualización sea 6,7 ó 8 en el monitor de TV.

Nota: Gire el tornillo de ajuste de la inclinación del sensor de inclinación hacia la derecha un cuarto de vuelta para completar el ajuste.

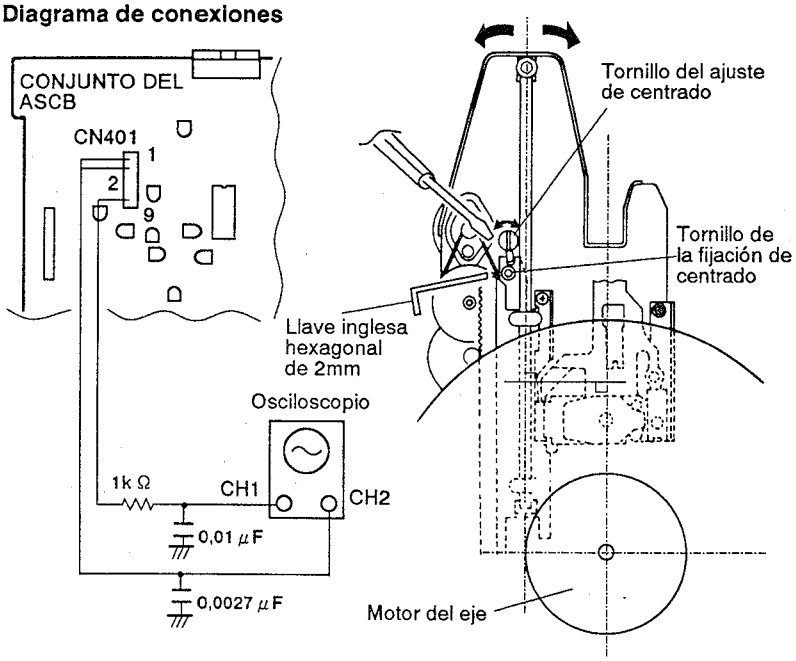
4. Busque el fotograma n.°475.
5. Ajuste VR607 hasta que la visualización del error de la inclinación sea 7.

8. COMPROBACIÓN Y AJUSTE DEL CENTRADO DEL MOTOR DEL EJE CENTRAL

- Propósito: Para ajustar la posición del conjunto mecánico hasta que el centro del motor del eje central quede en la pista del rayo lasérico cuando se mueve el conjunto del captor hacia el interior o exterior del disco.
- Cuando no se ajusta correctamente: Se salta la pista y se trada más tiempo en buscar.

• Instrumentos y dispositivos de medida:	• Osciloscopio • Destornillador pequeño • Filtro de paso bajo (0,01 μF + 1k Ω), (0,0027 μF)
• Punto de medita:	• Llave inglesa hexagonal de 2mm
• Disco de prueba y el modo de reproductor:	• CH1 : CN401 - 9 (TRK ERR), CH2 : CN401 - 1, 2 (TRK A, B) • Disco de prueba LD de 8 pulgadas (GGV1007) • Modo de prueba (n. °23,800 fijo, n. °3,000 fijo, Abierto del servo TRK, ON del servo TILT)
• Posiciones para ajustarse:	• Palanca de ajuste del centrado del motor del eje central

Diagrama de conexiones



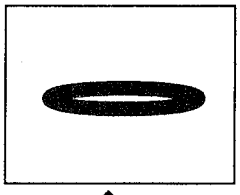


Fig. 1 Fotograma n. °23,800 Lissajous

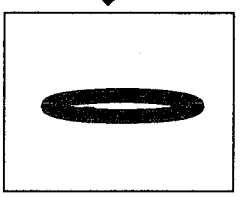


Fig. 2 Fotograma n. °3,000 Lissajous

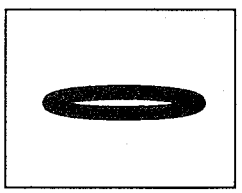


Fig. 3 Fotograma de Lissajous de la periferia interior del disco

Modo de X-Y
CH1: 50mV/div.
CH2: 5mV/div. CC

Procedimiento de ajuste

Nota:Ajuste la posición del eje de la corredera contra la línea central del motor del eje en este ajuste.

1. Ponga el osciloscopio en el modo de X - Y y conecte CH1 (entrada X) y CH2 (entrada Y) a CN401 - 9 y CN401 - 1,2 respectivamente.
2. Busque el fotograma n.°23,800 en el disco de prueba y observe la figura de Lissajous.
3. Busque el fotograma n.°3,000 y compruebe que la protuberancia en la figura de Lissajous es misma que la de n.°23,800.

Nota: Si la protuberancia de la forma de onda de Lissajous en el procedimiento 3, se difiere entre las periferias interior y exterior, realice los procedimientos de 4 a 6.

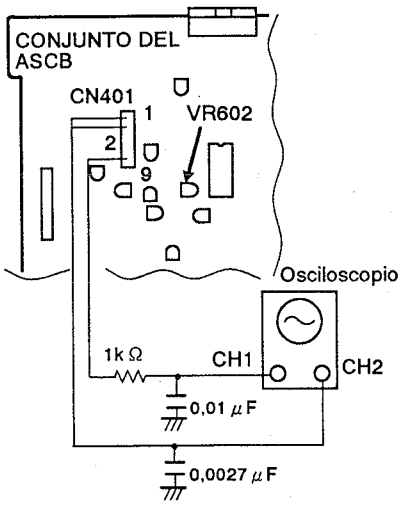
4. Busque el fotograma n.°23,800 y n.°3,000 alternativamente. Afloje un tornillo de fijación del centrado y ajuste el tornillo de ajuste del centrado para que las protuberancias de los fotogramas de Lissajous queden idénticas.
5. Cambie el disco al de compacto y reproduzca la periferia interior. Compruebe que el fotograma de Lissadous es mismo que el fotograma mostrado en la figura 3.
6. Si el fotograma del disco compacto se defiere del fotograma de la figura 3, repita los procedimientos de 4 a 5.
7. Fija el tornillo de fijación de centrado.

9. AJUSTE FINO DE LA RETÍCULA Y AJUSTE DEL EQUILIBRIO DE SEGUIMIENTO

- Próposito: Para ajustar la retícura a fin de que dos rayos lasércos se orienten al disco en la posición óptima.
- Cuando no se ajusta correctamente: Se salta la pista.

• Instrumentos y dispositivos de medida:	• Osciloscopio • Destornillador pequeño • Filtro de paso bajo (0,01 μF + 1k Ω), (0,0027 μF)
• Punto de medita:	• CH1 (X) : CN401 - 9 (TRK ERR), CH2 (Y) : CN401 - 1, 2 (TRK A, B)
• Disco de prueba y el modo de reproductor:	• Disco de prueba LD de 8 pulgadas (GGV1007) • Modo de prueba (Modo de reproducción, Cerrado el bucle de servo TRK, ON de servo de la inclinación)
• Posiciones para ajustarse:	• Abertura de retícula en el conjunto de captor • VR602 (TRK BAL)

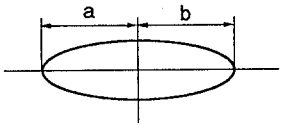
Diagrama de conexiones



La sonda para el eje Y debe estar en el modo X1

- Gama de osciloscopio:
  CH1 (X): 50mV / div.
  CH2 (Y): 5mV / div.

Modo de X-Y



Fotograma n.°3,000
Forma de onda de Lissajous
Anchua mínima en el sentido del eje Y, a=b

Procedimiento de ajuste

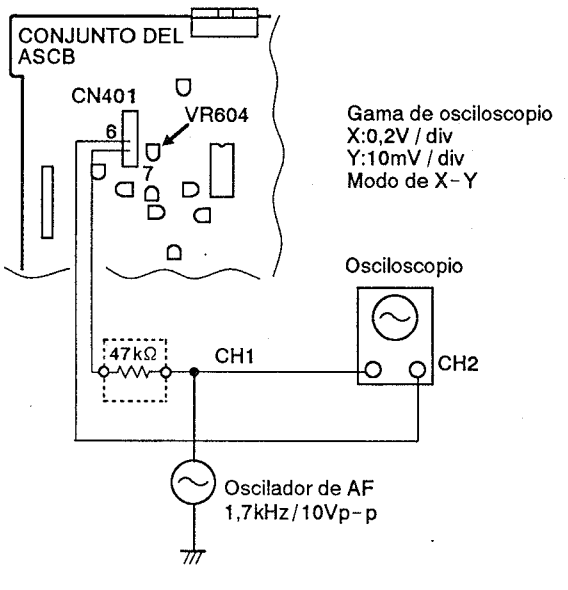
1. Reproduzca el disco en el fotograma n.°3,000 (la periferia interior) o cerca.
2. Ponga el osciloscopio en el modo X - Y, y conecte CN401 - 9 (TRK ERR) y CN401 - 1,2 (TRK A, B) a las entradas X e Y respectivamente. Luego observe el fotograma de Lissajous.
3. Inserte el punto del destornillador pequeño en la ranura de ajuste de retícula. Ajuste perfectamente hasta que se reduzca la anchura en el sentido del eje Y de la figura de Lissajous. (Refiérase el diagrama en la página 115.)
4. Compruebe que "a" y "b" son iguales en la figura de Lissajous. Si "a" no es igual con "b", ajuste VR602 (TRK BAL).
5. Cierre el bucle de servo TRK y compruebe que la imagen en la pantalla de TV es normal.

10. AJUSTE DE LA GANANCIA DEL BUCLE DE SERVOS DEL FOCO

- Prósito: Para ajustar la ganancia para el bucle de servo de foco al ajuste óptimo.
- Cuando no se ajusta correctamente: Reproducción empeorada

• Instrumentos y dispositivos de medida:	● Osciloscopio ● Oscilador de AF (1,7kHz / 10Vp-p) ● Resistor (47k Ω)
• Punto de medita:	● CH1 (X) : CN401 - 7 (FCS IN), CH2 (Y) : CN401 - 6 (FCS ERR)
• Disco de prueba y el modo de reproductor:	● Disco de prueba LD de 8 pulgadas (GGV1007) ● Modo de prueba (Modo fijo, Cerrado el bucle de servo TRK, ON de servo de la inclinación)
• Posiciones para ajustarse:	● VR604(FCS GAIN)

Diagrama de conexiones



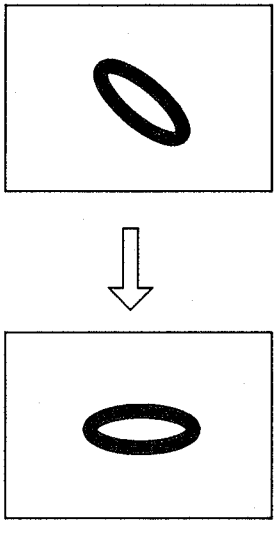


Fig. 1
Ajuste inadecuado

Fig. 2
Después de ajustar

Procedimiento de ajuste

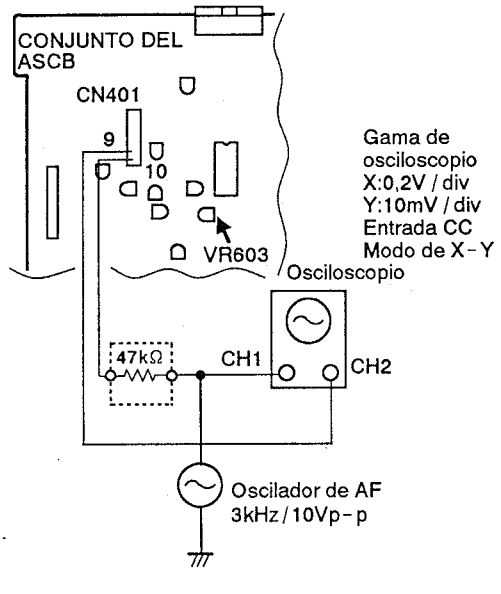
1. Busque el diagrama n.°15,000 del disco de prueba
2. Conecte el osciloscopio a CN401 - 6 y CN401 - 7 como muestra arriba.
3. Ponga el osciloscopio en el modo X - Y y observe la figura de Lissajous.
4. Ajuste VR604 hasta que la figura de Lissajous está simétrica con los ejes X e Y. (Vea las figuras 1 y 2.)

11. AJUSTE DE LA GANANCIA DEL BUCLE DE SERVOS DE SEGUIMIENTO

- Propósito: Para ajustar la ganancia para el bucle de servos de seguimiento al ajuste óptimo.
- Cuando no se ajusta correctamente: Reproducción empeorada.

• Instrumentos y dispositivos de medida:	• Osciloscopio • Oscilador de AF (3,0kHz / 10Vp-p) • Resistor (47k Ω)
• Punto de medita:	• CH1 (X) : CN401-10 (TRK IN), CH2 (Y) : CN401-9 (TRK ERR)
• Disco de prueba y el modo de reproductor:	• Disco de prueba LD de 8 pulgadas (GGV1007) • Modo de prueba (Modo fijo en n.°15,000 (Pantalla negra), Cerrado de servo TRK, ON de servo de la inclinación)
• Posiciones para ajustarse:	• VR603 (TRK GAIN)

Diagrama de conexiones



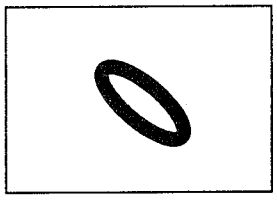


Fig. 1
Ajuste inadecuado

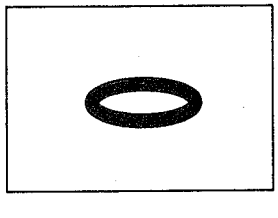


Fig. 2
Después de ajustar

Procedimiento de ajuste

1. Busque el fotograma n.°15,000 en el disco de prueba.
2. Conecte el osciloscopio a CN401-10 (TRK IN) y CN401-9 (TRK ERR) como se muestra en la diagrama abajo.
3. Ponga el osciloscopio en el modo X-Y y observe la figura de Lissajous.
4. Ajuste VR603 hasta que la figura Lissajous sea simétrica con los ejes X e Y. (Vea las figuras 1 y 2.)

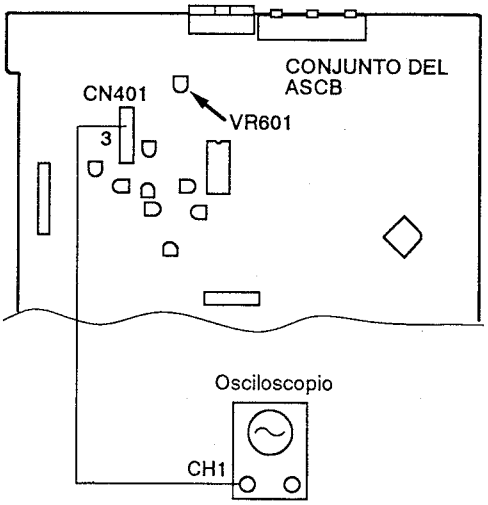
Nota: Si no se puede observar la forma de onda del osciloscopio, cambie el resistor de 47 kilohmios con el de 33 kilohmios, o aumente la salida del osciloscopio.

12. AJUSTE DE LA GANANCIA DE RF

- Propósito: Para ajustar la amplitued de la señal de RF al valor óptimo.
- Cuando no se ajusta correctamente: Sucederá notablemente la pérdida del sonido. Operaciones de exploración y búsqueda inestables.

• Instrumentos y dispositivos de medida:	• Osciloscopio
• Punto de medita:	• CH1 : CN401 - 3 (RF)
• Disco de prueba y el modo de reproductor:	• Disco de prueba LD de 8 pulgadas (GGV1007) • Modo de prueba (Modo fijo, Cerrado del bucle de servo TRK, ON de servo de la inclinación)
• Posiciones para ajustarse:	• VR601 (RF LEVEL)

Diagrama de conexiones



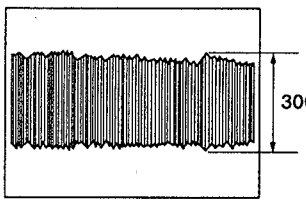


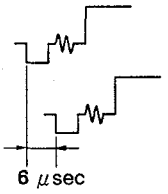
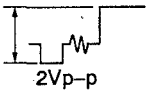
Fig. 1 Señal de RF

Gama de osciloscopio
5mV/div
2mS/div
Modo de CA

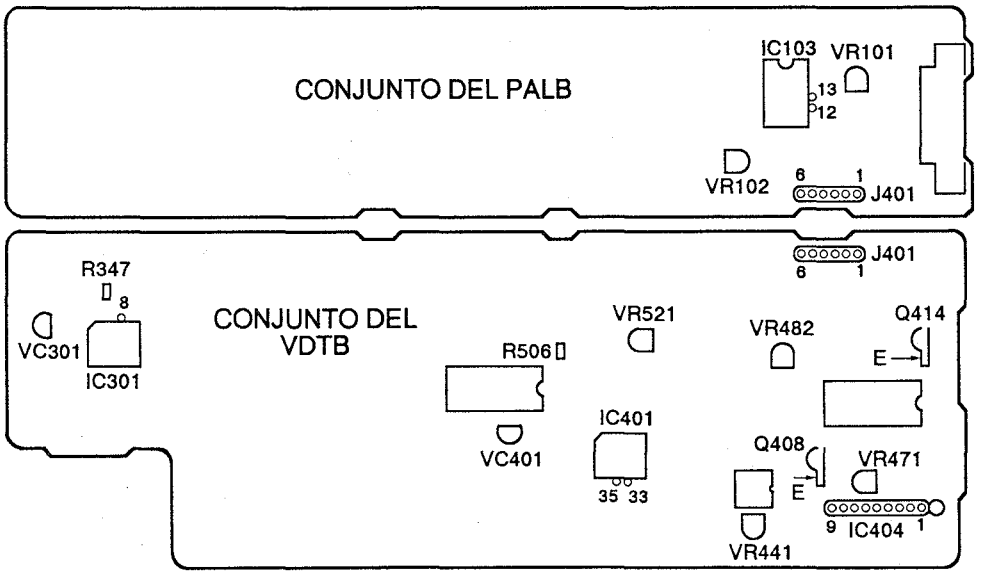
Procedimiento de ajuste

1. Busque el fotograma n.°15,000 en el disco de prueba.
2. Conecte el osciloscopio a CN401 - 3 (RF) y observe la señal de RF.
3. Ajuste VR601 hasta que la amplitued de la señal de RF sea 300mV ± 50mV. (Vea la figura 1.)

7.4.4 AJUSTES ELECTRICOS

	Ajuste	Punto de Ajuste	Especificaciones de Ajuste	Inspección Estándar	Notas
	Conjunto del VDTB				
1	Ajuste del reloj del generador sincrónico	VC401	Ajuste VC401 a 17,734475MHz en el lado OPEN de R506.	17,734475MHz ± 100Hz	
2	Ajuste de reloj REF	VC301	Ajuste a 3,5546875MHz al alfiler 8 (R347) de IC301.O, ajuste para que 1H del video PB (reproducción) sea 10 segundos más largos que 1H de señal de referencia de video.	3,5546875MHz ± 25Hz 15,6250kHz ± 0,1Hz	
3	Ajuste de frecuencia central de VCO	VR471	 Ajuste VR471 para que el retardo de tiempo entre entrada de video CCD (Q408 emitidor) y la salida de video CCD (Q414 emitidor) sea 70 μsec (1H + 6 μsec). Para este ajuste, conecte el alfiler de IC404 a GND.	70 μsec ± 1,4 μsec	
4	Ajuste del nivel de video	VR482	 Ajuste del nivel de video blanco de 100% a 2Vp-p en VIDEO OUT (J401, alfiler 6).	2Vp-p ± 5%	
5	Ajuste del nivel de video de retardo 1H	VR441	Ajuste VR441 para que el nivel de video de retardo de 1H en el alfiler 33 de IC401 sea mismo que el nivel de video en el alfiler 35. Video de línea principal es de ± 3%.	Video de línea principal ± 3%	
6	Ajuste del nivel de VPS ERR	VR521	Mientras observando la pantalla majenta en la esfera de vector, reduzca la fluctuaión en VIDEO OUT (J401, alfiler 6).		
	Conjunto del PALB				
7	Ajuste del nivel de video MOD	VR102	Ajuste VR102 para que el nivel de luz de video MOD al alfiler 13 de IC103 sea mismo que el nivel a través de video en el alfiler 12.	± 3%	
8	Ajuste del nivel SC de retardo de 1H	VR101	Mientras observando las barras de color en el modo fijo en la esfera de vector, reduzca la variación de ganancia en VIDEO OUT (J401, alfiler 6).		

- **PUNTO DE AJUSTE**



8. BLOCK DIAGRAMS

8.1 OVERALL BLOCK DIAGRAM

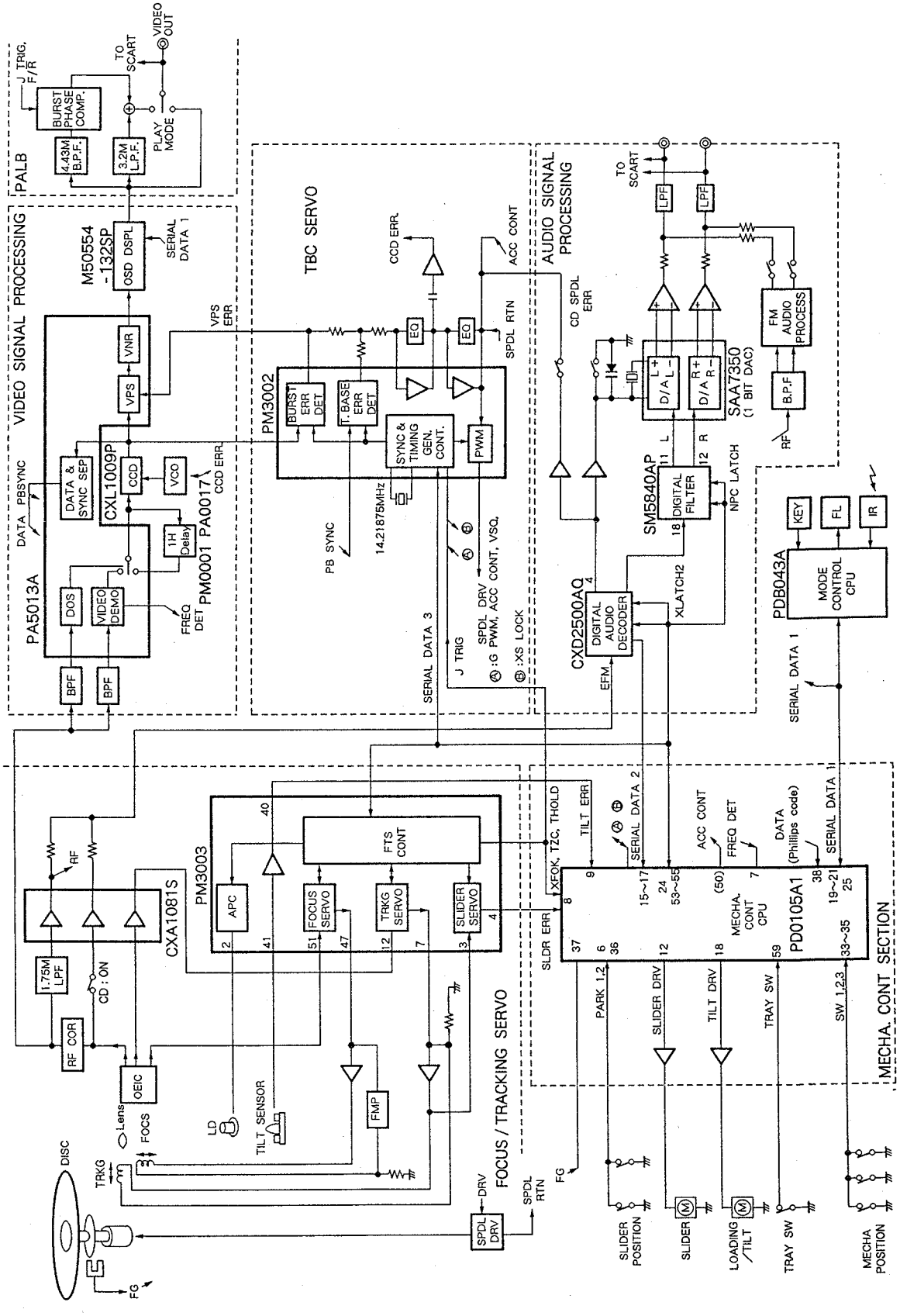


Fig. 8-1 Overall block diagram

8.2 VIDEO SECTION

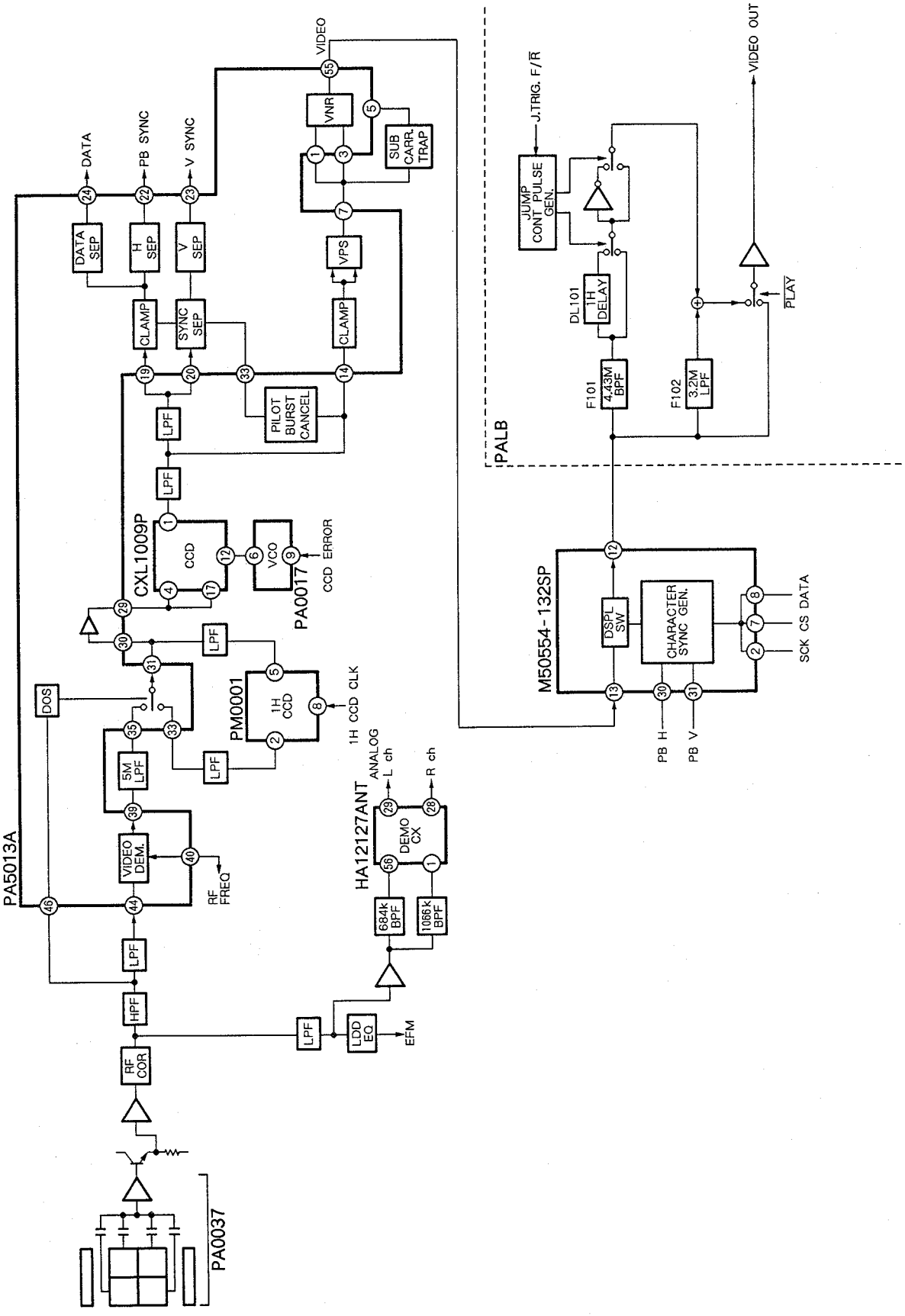


Fig. 8-2 Block diagram of the video section

8.3 TBC SECTION

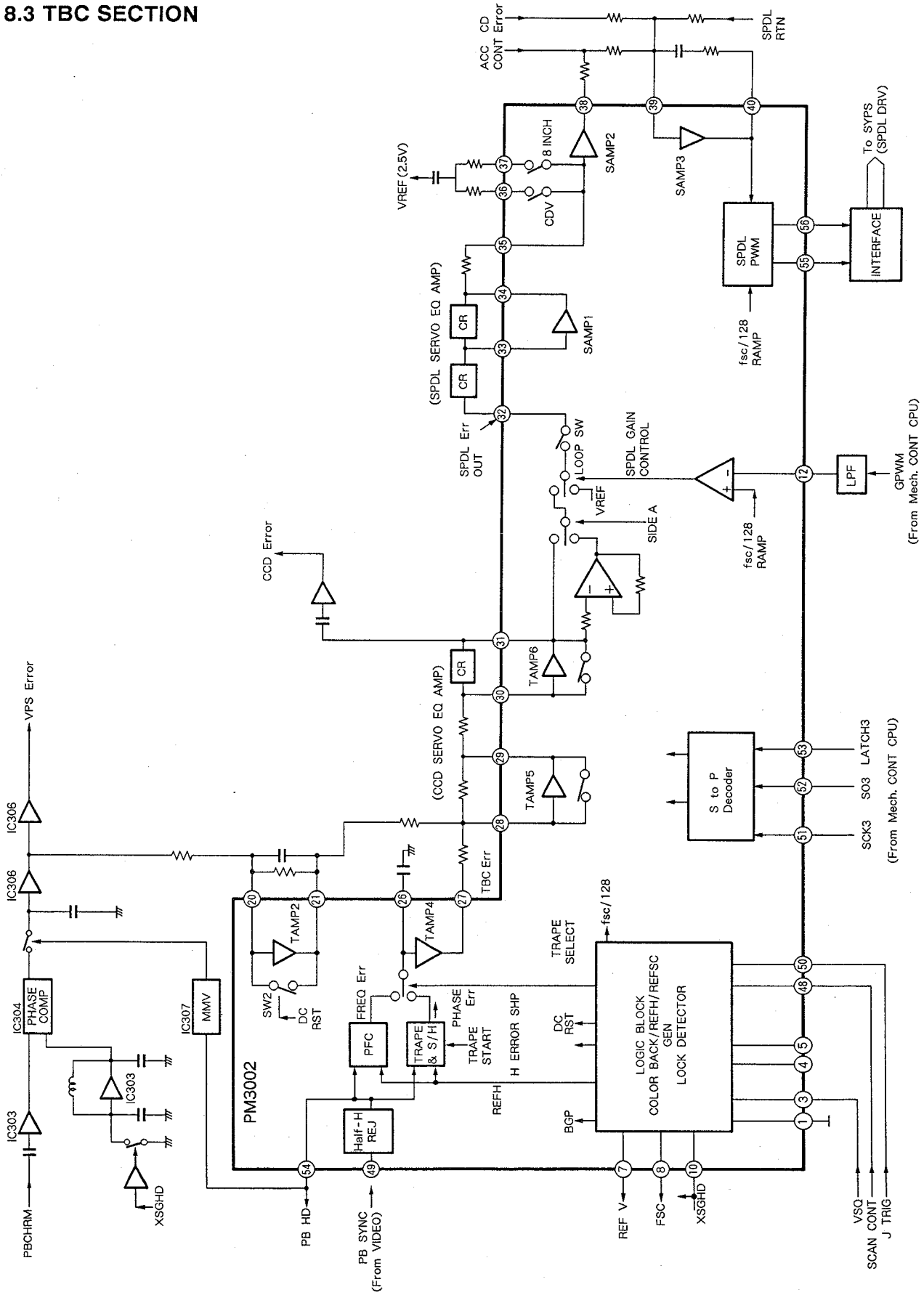


Fig. 8-3 Block diagram of the TBC section

8.4 FTS SECTION

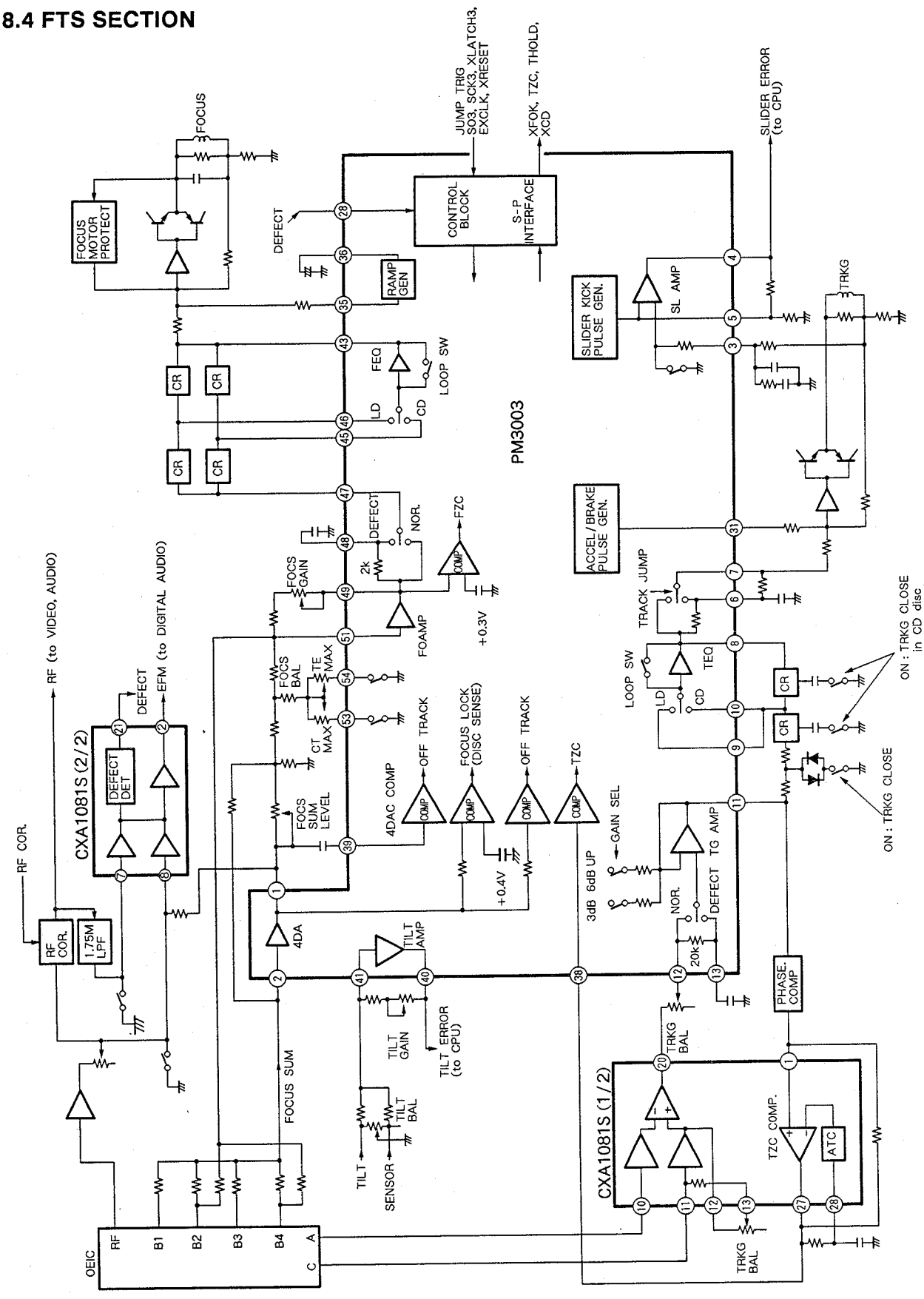


Fig. 8-4 Block diagram of the FTS section

9. ABBREVIATIONS TABLE

A	
ACCEL	ACCELERATE
ACOM	AUDIO COMPENSATOR
AF	AUDIO FREQUENCY
AFM	ANALOGUE FM AUDIO
AGC	AUTOMATIC GAIN CONTROL
ALC	AUTOMATIC LEVEL CONTROL
ANT	ANTENNA
ATC	AUTOMATIC THRESHOLD CONTROL
B	
BAL	BALANCE
C	
CAV	CONSTANT ANGULAR VELOCITY
CLV	CONSTANT LINEAR VELOCITY
CCD	CHARGE COUPLED DEVICE
CD	COMPACT DISC
CK	CLOCK
CONT	CONTROL
C-SYNC	COMPOSITE SYNCHRONIZATION
CX	AFM NOISE REDUCTION
D	
DEM	DEMODULATOR
DIG/ANA	DIGITAL/ANALOGUE
DL	DELAY LINE
DSP	DIGITAL SIGNAL PROCESSOR
DOS	DROP OUT SENSE
DRV	DRIVER
E	
EFM	EIGHT TO FOURTEEN MODULATION
ERR	ERROR
EQ	EQUALIZER
EXT	EXTERNAL
F	
FCS or FOCS	FOCUS
FG	FREQUENCY GENERATOR
FL	FLUORESCENT LAMP
FTS	FOCUS TRACKING SLIDER
Fsc	CHROMINANCE SUBCARRIER FREQUENCY
FWD	FORWARD
G	
GFS	GET FRAME SYNC LOCK
GND	GROUND
H	
HLD	HOLD
H SYNC	HORIZONTAL SYNCHRONIZATION
I	
INT	INTERNAL
IR	INFRARED RAYS
L	
L-CH	LEFT CHANNEL
LAT	LATCH
LD	LASER DIODE
LPF	LOW PASS FILTER
LIM	LIMITER
M	
MTR	MOTOR
µCOM	MICROCOMPUTER
P	
PD	PHOTO DETECTOR
PB	PLAYBACK
PLL	PHASE LOCKED LOOP
P-ON	POWER ON
R	
R-CH	RIGHT CHANNEL
RTN	RETURN
RFMD	RADIO FREQUENCY MODULATOR
RST	RESET
REV	REVERSE
RF-CORR	RF CORRECTION
S	
SPDL	SPINDLE
SLD	SLIDER
SO	SERIAL OUTPUT
SI	SERIAL INPUT
SCK	SERIAL CLOCK
SC	CHIP SELECT
SYPS	SYSTEM POWER SUPPLY
SW	SWITCH
S/H	SAMPLE & HOLD
SENS	SENSITIVITY
SQ	SQUELCH
T	
TRK or TRKG	TRACKING
TP	TEST POINT
TBC	TIME BASE CORRECTION
TGL	TOGGLE
U	
UNREG	UNREGULATED
V	
V-SYNC	VERTICAL SYNCHRONIZATION
VSQ	VIDEO SQUELCH
VPS	VIDEO PHASE SHIFTER
VDEM	VIDEO DEMODULATOR
VHF	VERY HIGH FREQUENCY
VCA	VOLTAGE CONTROLLED AMPLIFIER
VCO	VOLTAGE CONTROLLED OSCILLATOR
X	
X...	ACTIVATED WHEN LOW VOLTAGE

10. SPECIFICATIONS

1. General

System ..... LaserVision Disc system and Compact Disc digital audio system
Laser ..... Semiconductor laser wavelength 780 nm
Power requirements ..... AC 220 V, 50/60 Hz
Power consumption ..... 42 W
Weight ..... 8.0 kg
Dimensions ..... 420 (W) x 418 (D) x 122 (H) mm
16-9/16 (W) x 16-7/16 (D) x 4-13/16 (H) in
Operating temperature ..... +5°C ~ +35°C
(41°F - 95°F)
Operating humidity ..... 5% ~ 90%
(There should be no condensation of moisture.)

2. Disc

LaserVision Discs

*Maximum playing times
30 cm active play disc ..... 72 min/both sides
30 cm long play disc ..... 2 hours/both sides
20 cm active play disc ..... 28 min/both sides
14 min/one side
20 cm long play disc ..... 40 min/both sides
20 min/one side

Spindle motor speed
Active play disc ..... 1,500 rpm
Long play disc ..... 1,500 rpm (inner circumference)
to 570 rpm (outer circumference)
(For a 30 cm disc)

Compact Discs

DISC ..... Diameter: 12 cm, 8 cm, Thickness: 1.2 mm
Rotation direction (pickup side) ..... Counterclockwise
Liner speed ..... 1.2 ~ 1.4m/sec
*Maximum playing time
74 min. 12 cm discs
20 min. 8 cm discs
(For stereo playback)

Compact Discs with Video

Disc ..... Diameter: 12 cm, Thickness: 1.2 mm
Rotation direction (pickup side) ..... Counterclockwise
Linear speed ..... Audio portion: 1.2 ~ 1.4m/sec
Video portion: 11 ~ 12m/sec
*Maximum playing time ..... Video portion: 5 min. (CLV)
Audio portion: 20 min. (Digital)

** Actual playback time differs for each disc.*

3. Video characteristics

Format ..... PAL specifications
Video output
Level ..... 1 Vp-p nominal, sync. negative, terminated
Impedance ..... 75Ω unbalanced
Jack ..... RCA jack

4. Audio characteristics

Output level
During analog audio output ..... 200 mVrms
(1 kHz, 40%)
During digital audio output ..... 200 mVrms
(1 kHz, -20 dB)
Jacks ..... Both RCA jacks
Number of channels 2

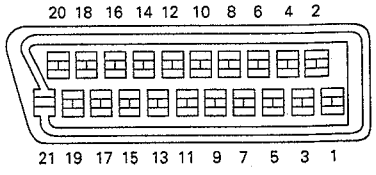
Digital Audio Characteristics

Frequency response	4 Hz - 20 kHz (±0.5 dB) (EIAJ)
SN ratio	105 dB (EIAJ)
Dynamic range	97 dB (EIAJ)
Channel separation	96 dB (EIAJ)
Total harmonic distortion	0.0025% (EIAJ)
Wow and flutter	Limit of measurement (EIAJ)

5. Other Terminals

Control input/output ..... Both miniature jacks
CD-DECK synchro ..... Miniature jack
Optical digital output ..... Optical digital jack
AV connector output ..... 21-pin connector
This connector provides the video and audio signals for connection to a colour video TV monitor (or TV set) which has a "AV CONNECTOR" terminal.

PIN assignment



PIN no.		
1	Audio 2/R out	17 GND
3	Audio 1/L out	19 Video out
4	GND	21 GND
8	Status	

6. Accessories

Remote control unit (CU-CLD048) 1
Size "AAA" (IEC R03) dry cell batteries 2
Euroconnector 1
Audio cord 1
Operating instructions 1
Warranty card 1

7. Functions

Remote control unit operations (CU-CLD048)

	Function	Active play Disc (CAV)	Long play Disc (CLV)	Compact Disc with Video	Compact Disc
Basic Functions	Single-side play	YES	YES	YES	YES
	Pause	YES	YES	YES	YES
	Stop	YES	YES	YES	YES
Search	Fast forward (forward and reverse)	YES	YES	YES	YES
	Chapter/Track skip	YES	YES	YES	YES
	Direct chapter/Track number search	YES	YES	YES	YES
	Frame number search	YES	NO	NO	NO
	Time number search	NO	YES	YES	YES
	Absolute time search	NO	NO	NO	YES
Program	Chapter/Track program play	YES	YES	YES	YES
	Program correction	YES	YES	YES	YES
Repeat	Repeat between 2 points	YES	YES	YES	YES
	Memory repeat	YES	YES	YES	YES
	Chapter/Track repeat	YES	YES	YES	YES
	One-side repeat	YES	YES	YES	YES
	Program repeat	YES	YES	YES	YES
	Random repeat	YES*1	YES*1	YES	YES
	Program random repeat	YES	YES	YES	YES
Trick play	Still/Step	YES	NO	NO	NO
	Multi-speed (Forward/reverse 9-level variable)	YES	NO	NO	NO
Time display	Elapsed time display	NO	YES	YES	YES
	Absolute time display	YES*1	NO	NO	YES
	Remaining track time display	NO	NO	YES	YES
	Remaining total time display	YES*1	YES*1	YES	YES
	Total number of selections, total time display	YES*1	YES*1	YES	YES
Others	Single play	YES	YES	YES	YES
	Hi-Lite scan	NO	NO	YES*4	YES
	Intro scan	YES	YES	YES*5	NO
	Digital level control	YES*3	YES*3	YES	YES
	CX system ON/OFF	YES*2	YES*2	NO	NO
	Audio channel selection (Stereo, 1/L, 2/R)	YES	YES	YES	YES

*1 Only discs with TOC

*2 Valid for analog sound playing a disc with the CX mark.

*3 Can only be used with discs with digital sound tracks.

*4 Audio part only

*5 Video part only

PLAYER FUNCTIONS

- Display, Visual Calendar Display
- Intro Scan, Hi-Lite Scan, Direct CD, Singl Play, Digital Level Control, Random Playback, Program Random Playback and Compu Program/Auto Program Edit
- Digital Sound for LaserVision Discs
- Last Memory

NOTE:

The specifications and design of this product are subject to change without notice, due to improvement.

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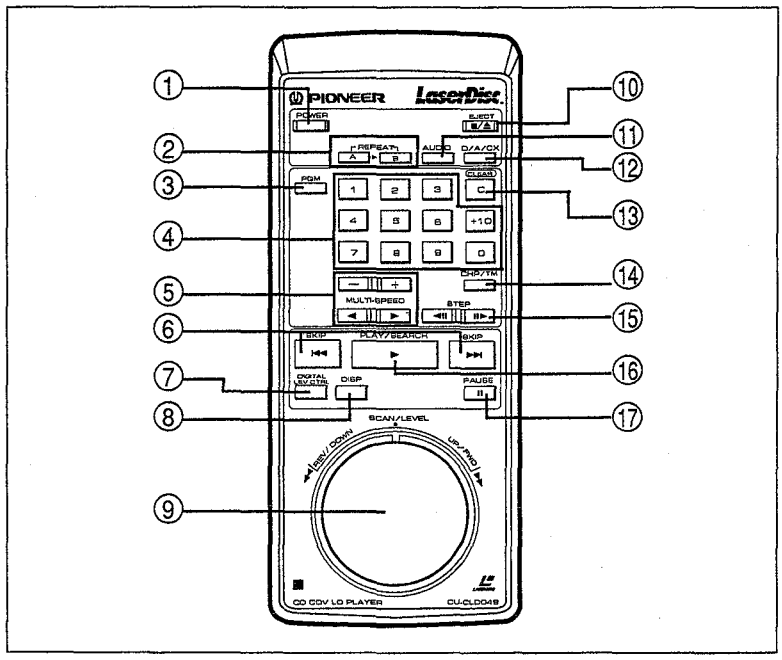
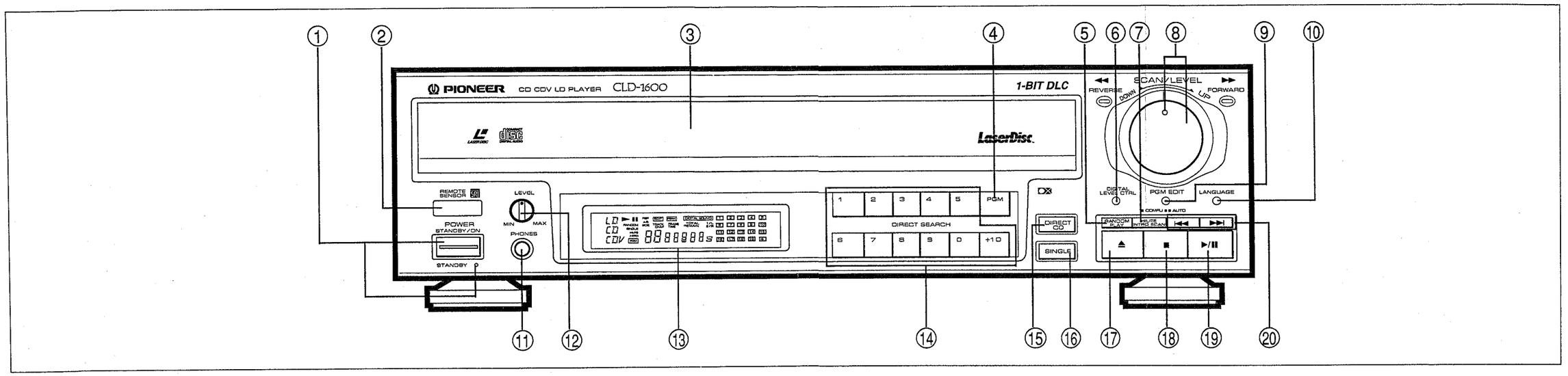
11. PANEL FACILITIES

Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.



① **POWER button**
Press to turn the power on and off.
② **REPEAT A/B buttons**
③ **PGM button**
④ **Direct search/Digit buttons**
⑤ **MULTI-SPEED buttons**
⑥ **SKIP buttons**
⑦ **DIGITAL LEV CTRL button**
⑧ **DISP button**
⑨ **SCAN/LEVEL control**
⑩ **EJECT button**
⑪ **AUDIO button**
⑫ **D/A/CX button**
⑬ **CLEAR button**
Used to clear the repeat mode, program mode, random play mode or hi-lite scan/intro scan mode. This button is also for use in correcting input digits.
⑭ **CHP/TM button**
⑮ **STEP button**
⑯ **PLAY/SEARCH button**
⑰ **PAUSE button**



① **POWER STANDBY/ON switch and STANDBY indicator**
Press to turn the power on and off.

② **REMOTE SENSOR**

③ **Door/Disc table**

④ **PGM button**

⑤ **RANDOM PLAY button**

⑥ **DIGITAL LEVEL CTRL button**

⑦ **HILITE INTRO SCAN button**

⑧ **SCAN/LEVEL control and indicator**

⑨ **PGM EDIT button**

⑩ **LANGUAGE button**

⑪ **PHONES jack**

⑫ **PHONES LEVEL control**
Turn this control in the "MAX" direction to increase the output level from the PHONES jack. Turn this control in the "MIN" direction to decrease the output level from the PHONES jack.

⑬ **Display window**

⑭ **DIRECT SEARCH/Digit buttons**

⑮ **DIRECT CD button**

⑯ **SINGLE button**

⑰ **Open/Close button**

⑱ **Stop button**

⑲ **Play/Pause button**

⑳ **Skip buttons**